

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME
BUREAU OF MARINE FISHERIES

FISH BULLETIN NO. 89

THE COMMERCIAL FISH CATCH OF CALIFORNIA

For the Year 1951

with
**An Evaluation of the Existing Anchovy
Case Pack Requirements**

By the Staff of the
BUREAU OF MARINE FISHERIES



1953



FIGURE 1

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FOREWORD

In 1929 a series of fish bulletins was originated, the purpose of which was to present current statistics of the commercial fish landings in California and to record historic notes and changes in conditions which affected these landings. The record of the marine sport catch and the live bait fishery for sport fishing was added in 1949 and has been included in subsequent bulletins. This bulletin is the fourteenth in the series.

Credit for this publication is due the staff of the statistical unit of the Bureau of Marine Fisheries. We acknowledge with sincere appreciation the ever increasing assistance of the marine staff of the Bureau of Patrol who collect the records and enforce the system. Without their interest the record would fail to reach its present degree of completeness.

November, 1952

INTRODUCTION

This publication presents the total landings of commercial fish and shipments into California in the year 1951. It follows in organization the plan used in Bulletin No. 86, which presents comparable figures for 1950. The attempt has been made, however, in this publication to differentiate more clearly the shipments into the State from the landings of our own fleet, and the arrangement within some of the tables has been slightly revised to facilitate the use of landing figures, as defined on page 24. Thus in Table 15, the landings of the California fleet have been totaled and shown in a separate column, with the shipments segregated in the next column. Experience has shown that this arrangement enhances the reference value of the tables. This policy has been pursued wherever possible throughout the tables.

A second minor departure from previous policy pertains to Figure 2 and Table 7. It has been customary in the past to omit the mollusks and crustaceans from these totals. In the present case they have been included. The difference in totals is small and will not impair comparison of the successive graphs. Anyone using these tables for more than superficial reference should first read the "Explanation of Tables" on page 24.

All catch statistics are influenced by economic demand as well as by the abundance of the supply. In using and interpreting the statistics of 1951, at least two economic factors must be considered.

The year 1951 was one of crises in the tuna industry. The phenomenal growth in the post-war years of the tuna fleet with its augmented catch, in conjunction with increased imports of canned and frozen tuna from abroad, gradually piled up a surplus of unsold goods. Early in 1951 the industry was forced to call a halt, and throughout the year the local fleet was either idle or fishing on a rotation basis. Whereas 193 regular tuna boats made 887 deliveries in 1950, 227 tuna boats in 1951 made only 818 deliveries. The average number of deliveries in 1951, 3.6 per boat, compares with 4.6 per boat in 1950. The decrease in catch was not proportionate. The explanation is that when in 1951 a vessel was released to fish, it stayed out until it filled its holds, knowing that it would be tied up again when it returned; whereas in 1950 it was often more productive to return to port with a partial load. These factors must be considered when interpreting the catch of 1951.

While the tuna fleet was idle, the industry was active in attempting legislative curbs on foreign imports. The common threat to the domestic plants and fleet forced concerted action on the part of all concerned. Such effort may have a profound effect upon the future of the tuna fishery.

Meanwhile in the sardine industry the year witnessed the culmination of a trend, associated with the decline in the fishery, from reduction to canning. Although 84 permits were issued to reduce a total of 150,000 tons of sardines, only 1,022 tons of this amount were used. The reasons were largely economic. The season's catch was roughly only 35 percent of that of the preceding year and the price per ton went up accordingly.

This high price coupled with a strong demand for canned sardines took the incentive and the profit out of reduction, and everything that could be packed went into the cans.

The failure of the sardine fishery was absolute in northern California, and almost so at Monterey. This stimulated wholesale trucking of fish both north and south. Of the 25,000 tons processed in Monterey plants, only 878 tons were landed there by fishing boats. The balance was received by truck and originated almost entirely in southern California. At the same time, so great was competition for sardines, that many of the canners in the Los Angeles region trucked loads to their plants from Santa Barbara and Port Hueneme.

These are but two of the economic factors which influenced the catch of 1951. Numerous others were operative, and must be evaluated in any analyses of the detailed catch statistics.

The report on the anchovy case pack requirements has been included in this bulletin because the latter offered the first chance of publication. The information in this article was needed, and in order to make it generally available, it was decided to publish it at the earliest opportunity.

AN EVALUATION OF THE EXISTING ANCHOVY CASE PACK REQUIREMENTS

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ACKNOWLEDGMENTS

The topic of this report was a problem assigned to the statistical unit of the Bureau of Marine Fisheries. The problem was delegated to the author who in turn elicited the assistance of a number of people in the actual collection of the data. Acknowledgment of this help from Messrs. C. E. Blunt, E. C. Greenhood and especially D. J. Miller who obtained the bulk of the information, is gratefully made. The writer must necessarily assume the responsibility for the conclusions and recommendations.

For the calculations, tabulations and preparation of tables and manuscript the writer is indebted to Mrs. C. J. Laing and Mr. S. Imamura. The help and cooperation of employees and the management of the several canneries in which the work was done is likewise acknowledged. Without this assistance from all concerned the work could not have been accomplished.

THE PROBLEM

The California Fish and Game Code prohibits the reduction of whole fish of any species, except under special permit. Such permits have been issued only in the case of sardines and shark carcasses,¹ and in these cases reduction is rigorously controlled.

Reduction, however, is a necessary adjunct of canning operations, because all nonedible portions of fish used for canning and all fish scrap must be disposed of. Reduction is the most sanitary and most economic means of utilization. The resulting meal, with its high protein content, is a valuable constituent of stock and poultry food, and the extracted oils find many industrial uses. Hence reduction, besides providing a means of disposal, helps materially to reduce the over-all cost of canning operations.

As a portion of each fish canned goes into reduction, and as it is illegal to reduce whole fish, the Department of Fish and Game is confronted with the problem of determining what percentage of the catch of any species should be canned. In all but a few cases economic factors eliminate this problem. The overwhelming majority of species taken have too great a food value to warrant any reduction of whole fish. At the present time only the sardine and the northern anchovy, *Engraulis mordax*, are available both in sufficient quantity and at a sufficiently low cost to make reduction potentially profitable, and the price and scarcity of sardines is rapidly taking it out of this class. Sardines have been reduced under permit for a number of years, and the case pack

¹ Special reduction permits are occasionally issued to meet some local or transient emergency, such as the elimination of carp from infested inland waters.

requirements have been set low enough to permit the reduction of approximately one-third of each ton taken for canning. In the case of the anchovy, on the contrary, no reduction has ever been permitted, and the required case pack is high enough to preclude any appreciable reduction of whole fish. For the pack in one-pound oval cans the cannery are required to put up 864 cans, or 18 cases containing 48 cans each, per ton of whole fish received. For each size of container used an equivalent case pack is specified.

A summary of the regulations governing the pack of anchovies and the required case pack follows:

1-lb. tall or oval	864 cans
(864 cans are equal to 18 cases, 48 cans to case)	
No. 10	120 cans
(120 cans are equal to 20 cases, 6 cans to case)	
$\frac{1}{2}$ -lb. oval or 9-oz. oblong	1,344 cans
(1,344 cans are equal to 28 cases, 48 cans to case)	
$\frac{1}{2}$ -lb. buffet	1,584 cans
(1,584 cans are equal to 33 cases, 48 cans to case)	
$\frac{1}{4}$ -lb. oblong	2,600 cans
(2,600 cans are equal to 26 cases, 100 cans to case)	
5-oz. or 6-oz. round	2,133 cans
(2,133 cans are equal to 21 $\frac{1}{3}$ cases, 100 cans to case)	

Any canner of anchovies desiring to pack in cans of a size or style not listed above must submit samples of the pack to the commission, and secure the acceptable equivalent before engaging in packing such size or style of pack.

Recently these requirements have been criticized by some segments of the industry on the grounds that cannery cannot always obtain this yield per ton. The reasons for such failure and the merits of the arguments advanced against a high case pack will be discussed after the presentation of evidence collected in six sample runs made at six separate plants located in three ports. One sample was run through a plant at Port Hueneme, three at Monterey and two at San Francisco. In addition, the raw-fish fill of container was investigated in three other plants to obtain as complete information as circumstances permitted.

Basically, the number of cans that can be packed from a ton of fish depends upon the amount of edible fish per ton of whole fish received, and upon the amount of fish in each can. Both these factors are variables. The amount of edible fish should be determined on the basis of generally current cannery practices, while the fill of container should be based upon the maximum customary fill of each sized container. The former factor, i.e., the amount of edible meat per ton of whole fish received, is for all practical purposes independent of the size and type of container used to pack it in. And as this is the controlling factor in setting case packs, it will be considered first.

AMOUNT OF EDIBLE MEAT PER TON OF FISH

The procedure followed in all these tests was to take a random sample of about 200 pounds of fish from the load. In most cases the sample was taken directly or indirectly from the receiving tanks into which the fish were conveyed from the unloading dock and scale. A cutting table was cleared and cleaned, and the entire weighed sample dumped on to this

table. Here the heads and tails were cut and separated mechanically from the utilizable portion of the fish. In four of the six plants the viscera were at the same time removed by means of suction cups. In the two remaining plants, not equipped with the latter, the viscera were in part withdrawn with the head.

As the cut (edible) sections emerged from the machines, they were collected on trays. When the entire sample had been cut the total amount of cut sections (destined for the packing tables) was weighed. Everything remaining on the cutting table, consisting of broken fish and fish of other species, was then collected and weighed. The latter weight was deducted from the sample weight to give the actual weight of whole, sound anchovies in the sample. It also gave the percentage admixture in the load. The weight of heads, tails and removed viscera was obtained by subtraction, as it was impractical to collect these portions because they dropped, as they were cut, into flumes or on to conveyers which carried them to the reduction plant.

The containers of cut (edible) sections were then taken to the packing tables. In all but one case the sample was packed into cans by one or two women detailed to that job by the packing-room foreman. In one case the sample was packed by the entire packing crew. The latter method averaged the packing skill and practices of all individuals, whereas the former method could be biased by the particular practice of the individual. To detect and allow for this, a large number of filled cans were taken from the production line and weighed, for comparison with the above results. As could be expected, such sample averages varied considerably. Average differences between production line weights and the sample weights differed by as much as 0.3 ounces per can. However, the difference was not consistent, and the production line weights were in some cases greater and in others less than the sample cans. In the presentation of the results from the six samples only the sample weights will be given, while the production line weights will be included in the over-all averages used in determining the accepted fill of container.

However the packing was done, the filled cans (without lids or sauce) were collected, counted and weighed, either collectively or in batches of 1 to 4, upon a laboratory scale. This gave the total weight of packed fish derived from the original sample, plus the weight of the specific number of cans used. In the first four trials the average weight of individual cans was determined by weighing (before or after the run) from 50 to 200 clean, empty cans, without lids. However, in the course of this work it was discovered that, while the variation in weight of individual cans within a given batch was small, nevertheless there was an appreciable and consistent difference in the weight of cans from different lots. Hence in the last two samples, the fish was packed in cans that had been previously weighed and segregated.

Table 1 shows the actual weights of fish, at various stages in processing, in the six separate samples. All percentages are based upon the corresponding stage. Thus the percent of broken and mixed fish is based upon the weight of the initial load. The cleaning loss is based upon the weight of whole, sound anchovies; while the packing loss is based upon line 5, the weight of cut sections.

TABLE 1
Results of Six Determinations of the Proportionate Amount of Fish Going into Cans, and the Processing Losses.
The Percentages Are Based Upon the Preceding Item. Thus the Cleaning Loss Is
Figured From Item 3, and the Packing Loss From Item 5.

	Sample 1			Sample 2			Sample 3		
	Pounds	Loss		Pounds	Loss		Pounds	Loss	
		Pounds	Percent		Pounds	Percent		Pounds	Percent
1. Weight of sample.....	199.8	/		223.1	3.7	1.66	259.0	5.0	1.93
2. Broken and mixed fish.....		12.2	6.11						
3. Whole, sound anchovies.....	187.6	80.6	42.96	219.4	91.1	41.52	254.0	115.0	45.3
4. Cleaning loss.....				128.3			139.0		
5. Weight of cut sections.....	107.0	9.243	8.64		9.92	7.73		7.0	5.04
6. Packing loss.....				118.38			132.0		
7. Weight of fish in cans.....	97.757								
8. Weight of fish in cans per ton of whole sound anchovies.....	1,042 52.1%			1,079 53.96%			1,039 51.96%		

(line 7 x 2000)

line 3

	Sample 4			Sample 5			Sample 6		
	Pounds	Loss		Pounds	Loss		Pounds	Loss	
		Pounds	Percent		Pounds	Percent		Pounds	Percent
1. Weight of sample.	215.17	3.75	1.74	214.95	8.30	3.86	135.25	5.50	4.07
2. Broken and mixed fish.	211.42			206.65			129.75		
3. Whole, sound anchovies.		98.00	46.40		88.60	42.90		66.75	51.45
4. Cleaning loss.									
5. Weight of cut sections.	113.42			118.05			63.00		
6. Packing loss.		6.32	5.57		4.22	3.57		1.01	1.60
7. Weight of fish in cans.	107.1			113.83			61.99		
8. Weight of fish in cans per ton of whole sound anchovies.	1,013 50.65%			1,102 55.08%			956 47.78%		

(line 7 x 2000)

line 3

TABLE 2

Condensation of Table 1 Showing Total Losses and Utilizable Fish in Pounds and Percent, Based on Six Samples

	Available		Losses		
	Pounds	Percent	Pounds	Percent	Recommended percentage allowance
1. Weight of samples.....	1,247.27	100.00			
2. Broken and mixed fish.....			38.45	3.08	3.0
3. Whole, sound anchovies.....	1,208.82	96.92			
4. Cleaning loss.....			540.05	44.68	45.00
5. Weight of cut sections.....	668.77	55.32			
6. Packing loss.....			37.713	5.6	5.6
7. Weight of fish in cans.....	631.057	52.2			
8. Weight of fish in cans per ton whole sound anchovies.....	1,044.00	52.2			

In Table 2 the results are condensed. The six sample values have been combined and the resulting percentages determined to give the average condition in the six plants.

Table 3 shows the pack resulting from these samples. Table 4 combines the sample values in order to give representative average figures for use with each size of container. Additional data on fill of container is presented later.

It appears from the above experiments that 48 to 55 percent of a load of whole, sound anchovies is utilizable in the can. The remaining percentage consisting of heads, tails, viscera and broken fish is necessarily discarded and is processed into fish meal and oil. On the basis of these tests one must conclude that there is a minimum of 956 pounds and an average of 1,044 pounds of edible meat in each ton of whole, sound anchovies received for processing.

This, however, is indicative of the potential rather than the actual yield. It indicates what percentage of the fish can be recovered in the can under prevailing cannery practice from a ton of whole, sound anchovies. While the procedure followed in these tests was based on plant rather than laboratory conditions, there are two sources of loss that have not been adequately considered which will lower the above yields.

One is the percentage admixture in occasional loads, in excess of the normal and nominal values obtained above. Discussion of this subject will be deferred until later. The second may be termed a conveyor loss. In the path of the fish through the plant from unloading to the filled and sealed cans, they travel from each operation in the process to the next in flumes or conveyors. In this journey there is an inevitable loss caused by mechanical damage to occasional fish or parts thereof, or by actual loss of whole fish or sections from the conveyors or tables. In the described tests the cut sections were taken from the cutting machines and carried directly to and placed upon the packing tables, thus eliminating any conveyor travel in this interval with its resulting loss. Allowance should therefore be made for this in fixing the amount of utilizable fish per ton.

TABLE 3
Data on the Number of Cans Packed From Each Sample, and Derived Information

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
1. Weight of fish in cans (pounds)-----	97.757	118.38	132.0	107.1	113.83	61.99
2. Number of cans packed-----	259	304	357	187	312	193
3. Size of can-----	6 oz. round	6 oz. round	6 oz. round	$\frac{1}{2}$ lb. oblong	6 oz. round	6 oz. round
4. Average raw fish fill-----	6.04 oz.	6.23 oz.	5.9 oz.	9.16 oz.	5.84 oz.	5.14 oz.
5. Pounds of raw fish per case-----	37.75	38.94	36.875	27.48	36.5	32.13
6. Case pack per ton of whole, sound anchovies-----	27.60	27.71	28.18	36.86	30.19	29.74
7. Case pack per ton of fish received-----	25.93	27.25	27.56	36.21	29.03	28.54
8. Required case pack-----	21 $\frac{1}{4}$	21 $\frac{1}{4}$	21 $\frac{1}{4}$	28	21 $\frac{1}{4}$	21 $\frac{1}{4}$
9. Required case pack as percent of actual case pack per ton of fish received (Item 8 x 100 ÷ Item 7)-----	82.27%	78.29%	77.41%	77.33%	73.49%	74.75%

TABLE 4

Recapitulation of Table 3 Showing for the 202 x 308 Can the Average Values Resulting From the Sample Runs

	Samples No. 1, 2, 3, 5 and 6	Samples No. 1, 2, 3 and 5
1. Weight of fish in cans (pounds)-----	523.957	461.967
2. Number of cans packed-----	1,425	1,232
3. Average raw fish fill-----	5.88 oz.	6.00 oz.
4. Pounds of raw fish per case-----	36.75	37.5
5. Cases per ton of whole sound anchovies-----	28.57	28.40
6. Cases per ton of fish received-----	27.61	27.47
7. Required case pack as percent of actual case pack per ton of fish received-----	77.3%	77.7%
(Required case pack x 100)		
Item 6		

As all other operational losses were duplicated in the test runs, this conveyor loss can be approximated by comparing the sample yield with the actual plant yield for that day's operation. The difference in yields per ton reflects the losses suffered in the mechanical transportation of fish and parts of fish through the plant.

Comparison of the above yields in three plants suggests an average value of 5 percent. The figure is admittedly an estimate, and the loss from this source undoubtedly varies from plant to plant, and probably from day to day. However, the three plants tested were average installations, and the values obtained were not too discordant. They were 3.55, 4.98 and 5.80 percent respectively, and the figures were obtained by converting the difference in case pack per ton between plant and sample yields into a percentage of the potential or sample yield. The average of these three values is 4.78, so that a 5 percent allowance for conveyor losses is a fair, if arbitrary, value to use. Hence the amount of utilizable fish finally put into cans in the six trial runs (Table 1, line 8) would be reduced by 5 percent in average plant operation, to:

Sample 1-----	990 lbs.	Sample 4-----	962 lbs.
Sample 2-----	1,025 lbs.	Sample 5-----	1,047 lbs.
Sample 3-----	987 lbs.	Sample 6-----	907 lbs.

This reduces the corresponding average, 1,044 of Table 2, to 992 pounds. This figure can be accepted, on the basis of the above actual tests, as a fair average value of the amount of edible meat that actually goes into the can, irrespective of the particular container used, from a ton (2,000 lbs.) of whole, sound anchovies.

The average figures presented thus far are based upon a ton of whole, sound anchovies. Such loads are perhaps never received at a plant. Inevitably there is a nominal admixture with other species, and a nominal percentage of broken, nonutilizable anchovies. The extent of this loss is shown in each sample. A deduction of 3 percent from the initial average load will convert this into one of whole, sound anchovies. As all apparent losses have now been determined, the foregoing results may be summarized in terms of a ton of anchovies as received at a plant.

	Loss		Remaining
	Percent	Pounds	
a. Original load -----			2,000
b. Broken and mixed fish -----	3.0	60	1,940
c. Cutting and cleaning loss -----	45.0	873	1,067
d. Conveyor loss -----	5.0	53	1,014
e. Packing loss -----	5.6	57	957
f. Raw fish in cans -----			957

Hence one may conclude that under average existing cannery conditions 957 pounds of edible meat goes into the can from every ton of fish received at a plant as anchovies. This figure may be rounded off to 960 pounds, and used henceforth for determining case packs.

That these allowances for losses are liberal is shown by a seventh sample taken from an efficient, small cannery without a reduction plant, where every effort is made to salvage all utilizable fish. The corresponding actual losses, and residual fish in this sample, prorated to 2,000 pounds of fish, are as follows:

	Loss		Remaining
	Percent	Pounds	
a. Original load -----			2,000
b. Broken and mixed fish -----	1.0	19	1,981
c. Cutting and cleaning loss -----	31.3	620	1,361
d. Packing loss -----	3.8	52	1,309
e. Raw fish in cans -----			1,309

If to these sample values (c. above) the 5 percent conveyor loss is applied, the actual amount of utilizable fish in cans becomes 1,244 pounds. The actual yield from a ton of fish is, in this case, 287 pounds greater than the average of the six reported samples. Assuming for the present a six-ounce raw fish fill per 6-ounce round can this is equivalent to an increased production of 7.65 cases per ton.

FILL OF CONTAINER

Given the amount of utilizable raw fish (960 pounds) per ton of fish received, the question as to how many cans of a given size and type should be packed per ton now becomes one of determining the average amount of raw fish that goes into each can. In the six experimental packs only two sizes of container were used. One was the half-pound, or nine-ounce oblong (569 x 365 x 103)¹ can, and the other the six-ounce round (202 x 308) can. To supplement this information all plants along the coast that were packing anchovies in this interval (September-October, 1952) were visited, and the fill of container in other-sized cans was obtained wherever possible. The data thus obtained have been combined in Table 5 with the sampling information presented above.

In the case of the six-ounce round can, there is considerable variation in fill of container, both in a given plant and between plants. In general, two practices prevail. In one, the can is over-filled with raw fish so that the shrinkage (roughly 13 percent in weight) in the subsequent exhausting leaves the can with the minimum head space. In this practice a lesser amount of sauce is required to fill the packed can. In the second method the can is barely filled with raw fish and the shrinkage caused by exhausting leaves the can with an appreciable head space. This practice requires

¹ A can is completely defined by its shape and dimensions in inches and sixteenths of an inch. Thus the symbols above adequately define a nine-ounce oblong can measuring 5 9/16 inches in length by 3 5/16 inches in width and 1 3/16 inches in height.

TABLE 5

Average Fill of Containers and Case Packs, Based on All Available Data

	6 oz. Round	8 oz. Buffet	9 oz. Oblong	1 lb. Oval
1. Weight of raw fish in cans-----	7,391.47 oz.	861.18 oz.	3,768.07 oz.	5,028.35 oz.
2. Number of cans-----	1,232	100	406	300
3. Average weight of raw fish in cans-----	6.00 oz.	8.61 oz.	9.28 oz.	16.76 oz.
4. Can pack per 960 pounds utiliz- able fish per ton-----	2,560 ¹ / ₂ cans	1,784 ¹ / ₂ cans	1,655 ¹ / ₂ cans	916 cans
5. Equivalent case pack-----	25.60	37.2	34.5	19.1
6. Required case pack-----	21.33	33.0	28.0	18.0
7. Percent required of potential----- (Item 6 x 100 ÷ Item 5)	83.3%	88.7%	81.1%	94.2%

a larger volume of sauce to fill the can. In both cases the net weight of contents, fish and sauce, is the same, but the amount of fish in each can is appreciably different. Average values for the two practices approximate 5.24 and 6.00 ounces of raw fish per can. As the required case pack must be attainable by all packers, under average conditions and according to prevailing practices, the higher value, corresponding to a greater weight of fish per can, should be used as the normal fill of container.

If one accepts the results given in Table 5 as the normal fill of containers, the case packs that can be expected from the average ton of anchovies as received at the plant can be calculated by dividing the amount of utilizable fish per ton (960 pounds) by the corresponding average amount of raw fish in each sized can. The results are tabulated in the fourth and fifth lines of Table 5. In the last line of this table the percentage that the required case pack forms of the actual is shown for each size of container.

THE EVALUATION OF EXISTING REQUIREMENTS

It is apparent that in all cases the requirements are lower than the actual average yield in the average plant. Moreover, monthly production reports submitted by the industry show that the required yields are regularly and consistently met and exceeded by an appreciable margin. Thus in the first nine months of this year processors submitted 45 separate monthly production reports covering a pack of 212,727 cases of anchovies in four sizes of container. In only one instance was there a violation of the case pack requirements. In roughly 60 separate packs reported in this interval the required case pack was exceeded in 59 cases and the excess was appreciable. This fact in itself proves that the existing requirements are not too stringent. Thus, with the various allowances made in arriving at the figure 960 pounds, the processor still has a leeway ranging from 6 percent in the case of ovals to 19 percent in the case of the nine-ounce oblong can.

The only argument for lowered requirements that merits consideration is that loads of anchovies received at a plant are at times excessively mixed with other fish, or with anchovies of a size unsuited for canning. If this were the rule, then the requirements should be lowered accordingly. However, it remains the exception, and as such there are adequate provisions in the Fish and Game Code to take care of it. In the first place, case packs are computed and reported to this department on a

monthly basis. Hence, any processor has the advantage of averaging occasional mixed loads with the good or average loads taken in the same 30-day interval. As the required case pack allows appreciable leeway, there is seldom any difficulty in meeting the requirements over a monthly period.

In the second place the processor has the privilege, when a load of anchovies is received containing excessive quantities of other species, of separating the latter in the presence of a representative of the Department of Fish and Game, and either weighing the two portions separately or estimating the extent of admixture. When this is done, separate fish receipts are made for each portion and the case pack is computed on the weight of anchovies only. There is, therefore, in this contingency, no legitimate excuse for failure to make the required case pack.

When, however, a load of anchovies is mixed, with respect to size of fish, the above provision does not apply. If a processor chooses to accept such loads of fish, he must make the required case pack upon the entire load. Hence it is of interest to know what minimum poundage of utilizable anchovies a load must contain in order to meet the required case pack.

Using the fill of containers listed in Table 5, it would require for each container size the following poundage of raw fish in the can to make the required pack. These amounts correspond to the listed poundage of whole sound anchovies. These figures, in turn, will show the percentage of each ton of anchovies that must be suitable for canning. Table 6 summarizes the results.

TABLE 6

The Amount of Edible Meat Needed per Ton to Meet the Required Case Packs, and the Corresponding Poundage and Percent of Whole Sound Anchovies

Container	Required pounds in can, per ton	Equivalent in whole sound anchovies	Percent of fish received
6 oz. round.....	800	1,613	80.7
8 oz. buffet.....	853	1,720	86.0
9 oz. oblong.....	780	1,573	78.7
1 lb. oval.....	905	1,825	91.3

This table shows that the requirements allow from 8.7 to 21.3 percent nonutilizable fish per ton of whole fish received. It shows also that the allowances are not uniform.

What tolerance should be permitted is entirely arbitrary. It should, however, be equitable, and it should be governed by the intent of the regulations. As the sole intent of this regulation is to prevent primary reduction of whole anchovies, the requirements should be high enough to accomplish that purpose, but low enough to permit the development of a legitimate canning industry without excessive legal deterrents. High, attainable requirements will stimulate greater utilization and plant efficiency, whereas low requirements tend to foster reduction. Inasmuch as the present regulations have accomplished their purpose the writer would recommend no change at this time.

In particular, the fills of containers are most conflicting and a potential source of nullifying any regulatory measures. If there is no standard or uniform fill of container, then it becomes impractical to set a logical

and equitable case pack. If the fill of container is progressively decreasing, a periodical upward revision in requirements should be made. As this department has no jurisdiction over the fill, periodical sampling is necessary and the requirements should be adjusted accordingly.

There appears to be a discrimination in the equivalents against the one-pound oval pack. This can be logically explained by fill of containers. By putting less raw fish in each can, correspondingly higher yields can be obtained, and the effect of this upon the case pack is inversely proportionate to the size of the can and proportionate to the number of cans per ton. Thus an ounce less raw fish per can makes a relative difference of 5.1 cases of six-ounce round cans per ton, whereas this difference amounts to only 1.2 cases of the one-pound oval pack. Any change, therefore, in the prevailing fill of containers necessitates a reconsideration of the case pack equivalents. Because insufficient samples of all but the six-ounce can have been taken, and because no standard fill appears to be general, it is recommended that no such revision be made at this time. A possible future downward revision of the one-pound oval requirement, and an upward revision of the six-ounce round case pack is suggested by this preliminary survey.

This survey has also revealed the difficulties in establishing requirements. There are innumerable sources of error, an excessive range in the results; and the lack of consistency and valid averages leaves tremendous latitude in the choice of values to be used. Under these conditions it is impossible to establish regulations that will be equitable to all packs and all processors. The present results are merely indicative. More comprehensive and conclusive results would necessitate an amount of work not justified by the fluid condition existing in the industry. In particular, the lack of any standard fills is disconcerting. Inasmuch as the existing requirements are both accomplishing their purpose and are generally accepted by the majority, it seems advisable to recommend no present change.

LIST OF COMMON AND SCIENTIFIC NAMES OF FISHES, CRUSTACEANS AND MOLLUSKS

<i>Common name</i>	<i>Fishes</i>	<i>Scientific name</i>
Anchovy		
Deep-bodied	-----	<i>Anchoa compressa</i>
Northern	-----	<i>Engraulis mordax</i>
Slough	-----	<i>Anchoa delicatissima</i>
Barracuda	-----	<i>Sphyræna argentea</i>
Bonito, California	-----	<i>Sarda lineolata</i>
Cabezone	-----	<i>Scorpaenichthys marmoratus</i>
Cabrilla	-----	<i>Epinephelus analogus</i>
Carp	-----	<i>Cyprinus carpio</i>
Catfish		
White catfish	-----	<i>Ictalurus catus</i>
Brown bullhead	-----	<i>Ameiurus nebulosus</i>
Corbina, Mexican	-----	<i>Cynoscion orthopterus</i>
Crevally	-----	<i>Caranx</i> sp.
Flounder, starry	-----	<i>Platichthys stellatus</i>
Flying fish, California	-----	<i>Cypselurus californicus</i>
Grouper	-----	Species of <i>Mycteroperca</i>
Hake	-----	<i>Merluccius productus</i>
Halibut, California	-----	<i>Paralichthys californicus</i>
Halibut, Pacific	-----	<i>Hippoglossus stenolepis</i>
Hardhead		
Greaser blackfish	-----	<i>Orthodon microlepidotus</i>
Hardhead	-----	<i>Mylopharodon conocephalus</i>
Herring, Pacific	-----	<i>Clupea pallasii</i>
Kingfish		
Kingfish	-----	<i>Genyonemus lineatus</i>
Queenfish	-----	<i>Seriplus politus</i>
Lingcod	-----	<i>Ophiodon elongatus</i>
Mackerel, jack	-----	<i>Trachurus symmetricus</i>
Mackerel, Pacific	-----	<i>Pneumatophorus diego</i>
Mullet	-----	<i>Mugil cephalus</i>
Perch		
Blacksmith	-----	<i>Chromis punctipinnis</i>
Halfmoon	-----	<i>Medialuna californiensis</i>
Opaleye	-----	<i>Girella nigricans</i>
Salt-water perch	-----	Members of family Embiotocidae
Pike (Sacramento squawfish)	-----	<i>Ptychocheilus grandis</i>
Pompano, California	-----	<i>Palometa simillima</i>

LIST OF COMMON AND SCIENTIFIC NAMES OF FISHES, CRUSTACEANS AND MOLLUSKS—Continued

Fishes—Continued

Common name	Scientific name
Rock bass	
Kelp bass	<i>Paralabrax clathratus</i>
Sand bass	<i>Paralabrax nebulifer</i>
Rockfish	All species of <i>Sebastes</i> and <i>Sebastolobus</i>
Sablefish	<i>Anoplopoma fimbria</i>
Salmon	
King	<i>Oncorhynchus tshawytscha</i>
Silver	<i>Oncorhynchus kisutch</i>
Sand dab	Species of <i>Citharichthys</i>
Sardine, Pacific	<i>Sardinops caerulea</i>
Sculpin	<i>Scorpaena guttata</i>
Sea bass, black	<i>Stereolepis gigas</i>
Sea bass, white	<i>Cynoscion nobilis</i>
Seatrout, greenling	<i>Hexagrammos decagrammus</i>
Shad	<i>Alosa sapidissima</i>
Shark	
Basking shark	<i>Cetorhinus maximus</i>
Dogfish	<i>Squalus acanthias</i>
Gray smoothhound	<i>Mustelus californicus</i>
Leopard shark	<i>Triakis semifasciata</i>
Souppin	<i>Galeorhinus zyopterus</i>
Varying amounts of other species	
Sheepshead, California	<i>Pimelometopon pulchrum</i>
Sierra	<i>Scomberomorus sierra</i>
Skate	
Big	<i>Raja binoculata</i>
California	<i>Raja inornata</i>
Longnose	<i>Raja rhina</i>
Varying amounts of other species	
Skipjack, black	<i>Euthynnus lineatus</i>
Smelt	
Grunion	<i>Leuresthes tenuis</i>
Jack smelt	<i>Atherinopsis californiensis</i>
Surf smelt	<i>Hypomesus pretiosus</i>
Top smelt	<i>Atherinops affinis</i>
Small amounts of other Osmerids	
Sole	
English	<i>Parophrys vetulus</i>
Dover	<i>Microstomus pacificus</i>
Petrale	<i>Eopsetta jordani</i>
Rex	<i>Glyptocephalus zachirus</i>
Varying amounts of other species	
Splittail	<i>Pogonichthys macrolepidotus</i>
Swordfish, broadbill	<i>Xiphias gladius</i>
Tomcod	<i>Microgadus proximus</i>

LIST OF COMMON AND SCIENTIFIC NAMES OF FISHES,
CRUSTACEANS AND MOLLUSKS—Continued

Fishes—Continued

Common name	Scientific name
Tuna	
Albacore	<i>Thunnus germon</i>
Bigeye	<i>Parathunnus sibi</i>
Bluefin tuna	<i>Thunnus thynnus</i>
Skipjack	<i>Katsuwonus pelamis</i>
Yellowfin tuna	<i>Neothunnus macropterus</i>
Turbot	
Curlfin	<i>Pleuronichthys decurrens</i>
Diamond	<i>Hypsopsetta gattulata</i>
Sharpridge	<i>Pleuronichthys verticalis</i>
Small amounts of other species	
Wahoo	<i>Acanthocybium solandri</i>
Whitebait	<i>Allosmerus attenuatus</i> <i>Spirinchus starksi</i> Young of several other species
Whitefish, ocean	<i>Caulolatilus princeps</i>
Yellowtail	<i>Seriola dorsalis</i>

Crustaceans

Crab, market	<i>Cancer magister</i>
Crab, rock	<i>Cancer antennarius</i> <i>Cancer anthonyi</i> <i>Cancer productus</i>
Lobster, spiny	<i>Panulirus interruptus</i>
Shrimp	<i>Crago franciscorum</i> <i>Crago nigricauda</i> <i>Squilla</i> sp.

Mollusks

Abalone	
Pink	<i>Haliotis corrugata</i>
Red	<i>Haliotis rufescens</i>
Southern green	<i>Haliotis fulgens</i>
Clam	
Cockle	<i>Paphia staminea</i> Species of <i>Chione</i>
Gaper	<i>Schizothaerus nuttalli</i>
Jackknife	<i>Tagelus californianus</i>
Japanese	<i>Tapes semidecussata</i>
Pismo	<i>Tivela stultorum</i>
Softshell	<i>Mya arenaria</i>
Washington	<i>Saxidomus nuttalli</i>
Mussel	<i>Mytilus californianus</i> <i>Mytilus edulis</i>
Octopus	<i>Paroctopus apollyon</i>
Oyster	
Eastern	<i>Ostrea virginica</i>
Native	<i>Ostrea lurida</i>
Pacific	<i>Ostrea gigas</i>
Prawn	<i>Pandalus</i> sp.
Squid	<i>Loligo opalescens</i>

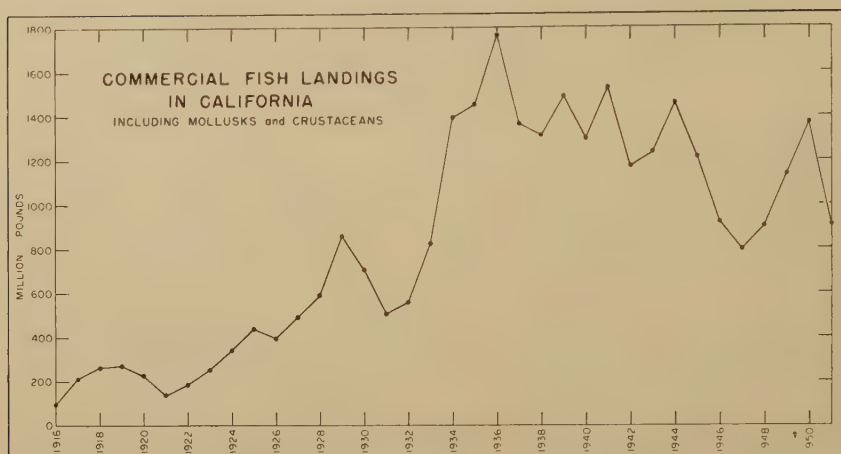


FIGURE 2. Total annual landings and shipments into California of commercial fish, mollusks and crustaceans. Includes sardine deliveries to reduction ships during 1930 through 1938. See Table 7.

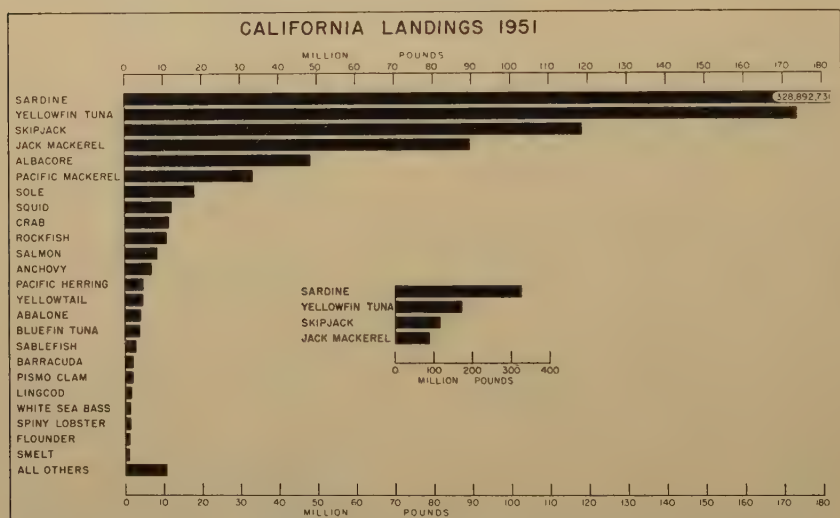


FIGURE 3. The relative landings in 1951 of the more important commercial species. Includes shipments with the catch of the California fleet. See Table 8.

EXPLANATION OF TABLES

The tables published in this bulletin supply the complete available record of the commercial catch of fish, mollusks and crustaceans landed in California. In these tables the catch is divided into two components, and in using the tables it is important to appreciate the distinction. The major component is the catch of the California fleet of fishing vessels. The other includes the shipments by common carrier into California of fresh fish originating in other states or countries. Throughout the tables the first component is designated as the catch—or landings—of the California fleet. The second is indicated by the one word "shipments."

TABLE 7

Total Annual Landings and Shipments Into California of Commercial Fish, Mollusks and Crustaceans. Includes Sardine Deliveries to Reduction Ships During 1930 Through 1938

Year	Pounds	Year	Pounds
1916	95,002,695	1934	1,390,798,650
1917	209,876,670	1935	1,448,016,584
1918	261,134,265	1936	1,764,900,136
1919	266,270,240	1937	1,362,983,717
1920	222,004,376	1938	1,310,595,651
1921	135,347,826	1939	1,486,534,906
1922	182,343,333	1940	1,297,517,441
1923	253,874,581	1941	1,529,147,645
1924	340,445,919	1942	1,173,414,078
1925	437,502,232	1943	1,234,049,119
1926	394,964,393	1944	1,459,445,859
1927	487,166,143	1945	1,216,467,433
1928	583,526,751	1946	919,850,476
1929	856,854,055	1947	795,498,998
1930	702,188,795	1948	900,540,206
1931	502,389,875	1949	1,135,325,345
1932	556,139,053	1950	1,366,596,282
1933	821,805,007	1951	904,088,178

TABLE 8

Total Commercial Fish Landings and Shipments Into California During 1951

Species	Pounds	Species	Pounds
Sardine	328,892,731	Abalone	4,084,115
Yellowfin tuna	173,668,590	Bluefin tuna	3,864,506
Skipjack	118,637,672	Sablefish	2,887,488
Jack mackerel	89,838,095	Barracuda	2,134,943
Albacore	48,436,233	Pismo clam	2,064,924
Pacific mackerel	33,518,435	Lingcod	1,747,343
Sole	18,226,523	White sea bass	1,546,555
Squid	12,382,869	Spiny lobster	1,470,167
Crab	11,568,353	Flounder	1,128,827
Rockfish	10,993,557	Smelt	1,095,504
Salmon	8,601,165	All others	10,736,488
Anchovy	6,954,852		
Pacific herring	4,917,643	Total pounds	904,088,178
Yellowtail	4,690,600		

The catch of the California fleet is actually the aggregate of deliveries at California ports of all fresh fish, crustaceans and mollusks caught by American fishing vessels in the Pacific Ocean and rivers and streams of California. It is not strictly the total and exclusive catch of the California fishing fleet. The catch actually includes deliveries made by fishing vessels based and registered in Oregon, Washington and Alaska. Conversely, many vessels of the California fleet deliver occasional loads to Oregon and Washington. However, these exceptions are nominal, and to all intents and purposes the designation is correct.

The term shipment is used in the tables to separate all landings in California of fresh fish taken in other states or countries by alien vessels, or vessels of other fleets, and delivered by rail, truck or ocean carrier. The largest portion of the shipments consists of tuna imported frozen from abroad for processing in California. The records of such fish destined

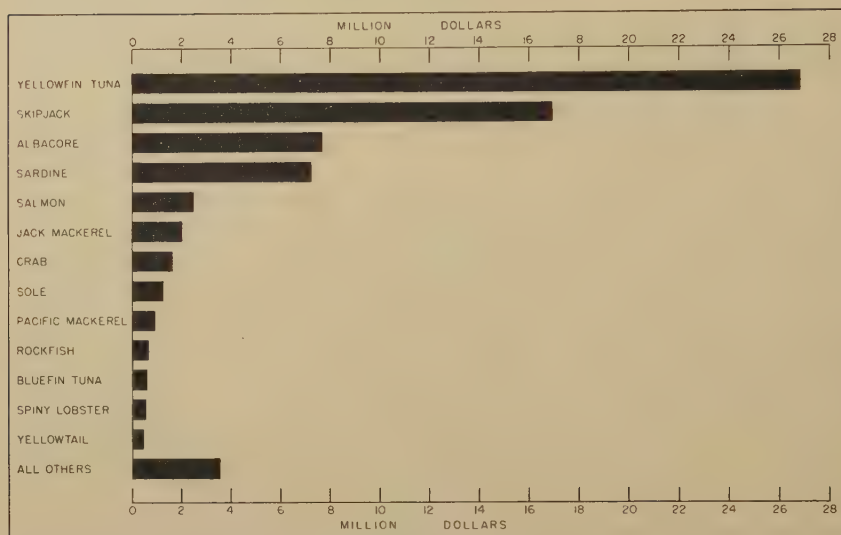


FIGURE 4. Shows the relative value in 1951 of the more important commercial species. This chart is based on the figures in Table 9, which are derived from the comparable figures in Table 8.

to domestic canneries are complete and accurate. The records of shipments of fish destined for fresh consumption are incomplete, because California fish receipts are not always made for loads trucked across a state or national boundary. Thus, customs declarations show that there was a large poundage of lobster trucked across the United States-Mexican boundary into Southern California, but of this amount only a fraction is reported on our fish receipts.

In Tables 10 to 13 inclusive, the term "yearly" has been intentionally employed in place of "annual," because the year in question is the license year, extending from April 1 to March 31 of the succeeding year.

Whenever in these tables the value of the catch is given (Tables 9, and 24 to 31, inclusive) the value shown represents the amount paid to the fishermen. In the case of shipments the price paid by the buyer, as shown on the fish receipt, is used. Where no price is shown a calculated value is applied, based on the average price per pound paid for that species for the month in the area where the fish is delivered.

In the case of halibut delivered in the San Francisco region, two species are involved. In many instances the species are not separated in the fish receipts. To avoid a grouping of the two in the records, the percentage composition of the catch was determined by periodic sampling. Biologists of this bureau investigated market loads and determined the actual composition of the halibut catch. This is, over a period of time, consistently about 90 percent Pacific halibut and 10 percent California halibut. Hence the total catch of halibut in the San Francisco region is shown in this proportion.

The poundages shown in the tables are obtained from the weights shown on the individual fish receipts. The receipt does not always indicate whether the fish is cleaned or round. Nor does the receipt indicate, in the case of those species normally cleaned by the fisherman, the extent

TABLE 9

Value of Commercial Fish Landings and Shipments Into California During 1951

Species	Value	Species	Value
Yellowfin tuna.....	\$26,834,039	Pacific mackerel.....	932,148
Skipjack.....	16,941,631	Rockfish.....	654,851
Albacore.....	7,679,890	Bluefin tuna.....	604,352
Sardine.....	7,247,470	Spiny lobster.....	561,703
Salmon.....	2,475,628	Yellowtail.....	445,269
Jack mackerel.....	2,016,402	All others.....	3,551,453
Crab.....	1,621,546		
Sole.....	1,254,433	Total value.....	\$72,820,815

of the cleaning and the resulting weight loss. In such cases no adjustment is made in the tables for cleaning losses. The poundage shown is the aggregate of all weights given on the individual fish receipts.

An exception to this rule is made for catfish. This species is invariably delivered cleaned, and as the cleaning loss is 50 percent, the total poundage on the fish receipts is multiplied by two in the tables.

In the case of mollusks these are often purchased by number rather than by weight. Hence, appropriate average conversion factors have been developed by sampling to convert to round weight, or weight in the shell. The factors now in use are as follows:

Crab, market	2 pounds each
Abalone, red	50 pounds per dozen
Abalone, pink	35 pounds per dozen
Abalone, green	35 pounds per dozen
Clams, Mexican Pismo.....	8 pounds round weight per 1 pound cleaned weight
Clams, Washington	7 pounds per dozen
Oyster, Eastern	30 pounds per hundred
Oyster, Pacific	50 pounds per hundred, or 8 pounds per cleaned gallon

One item covering a shipment of Japanese clams is given in cleaned weight because no conversion factor was available.

Many of the tables include fresh water species and species taken in inland waters. The poundages so taken are credited to the adjacent coastal region. Thus, mullet from the Salton Sea is in all tables credited to the San Diego region, while carp from Clear Lake is included in the totals for the Sacramento region. In these two instances the fish receipt record is supplemented by statistics supplied by the inland fisheries branch of the department, under whose jurisdiction much of the fishing is conducted.

Tables 7 to 31 inclusive pertain to the commercial fisheries. Inasmuch as there is a large poundage of fish taken by recreational fishermen, an estimate of this sport catch is shown in Table 32, and the amount of live bait used to obtain this catch is shown in Table 33. The addition of these two tables gives a closer approximation to the total yield of the species. Unfortunately, the estimated sport catch is recorded in numbers of fish rather than in weight of fish. Experience has shown that in the sport fishery only the number of fish taken can be obtained with sufficient accuracy. The amount of bait used is compiled from the daily bait records made out by those boats supplying the party fishing boats. These figures do not include the quantities of bait used by the regular commercial fleet.

TABLE 10

Yearly Number of Licensed Commercial Fishermen in California

1942-1943	9,043	1947-1948	12,894
1943-1944	11,804	1948-1949	14,261
1944-1945	10,871	1949-1950	14,962
1945-1946	11,747	1950-1951	14,600
1946-1947	12,312	1951-1952	13,193

TABLE 11

Number of Commercial Fishermen Licensed by Region, in the 1951-1952 License Year

Region of residence	Number of fishermen, 1951-1952
Eureka	836
Sacramento	497
San Francisco	1,401
Monterey	1,182
Santa Barbara	485
Los Angeles	4,809
San Diego	2,977
Alaska, Washington and Oregon fishermen licensed in California	929
Mexican nationals licensed in California	77
Total	13,193

TABLE 12

Yearly Number of Registered Fishing Boats, Grouped According to Length

Season	Under 40 feet	40 to 84 feet	85 feet and over	Total
1942-1943	2,264	650	51	2,965
1943-1944	2,929	750	47	3,726
1944-1945	2,852	870	60	3,782
1945-1946	3,103	943	99	4,145
1946-1947	3,558	1,144	155	4,857
1947-1948	3,639	1,201	202	5,042
1948-1949	4,088	1,378	256	5,722
1949-1950	4,294	1,595	271	6,160
1950-1951	4,127	1,710	266	6,103
1951-1952	3,927	1,631	279	5,837

TABLE 13

Number of Registered Fishing Boats, Grouped by Length and Region of Home Port,
During the 1951-1952 Season

Region of home port	Number of boats, grouped by length						Total number of boats for each region
	Up to 24 feet	25 to 39 feet	40 to 64 feet	65 to 84 feet	85 to 99 feet	100 feet and over	
Eureka	54	289	98	7		2	450
Sacramento	85	203	12	1			301
San Francisco	56	621	146	21		2	846
Monterey	107	256	60	43	4	1	471
Santa Barbara	34	130	67	1			232
Los Angeles	425	1,154	482	140	47	31	2,279
San Diego	109	359	184	35	52	118	857
Alaska, Washington and Oregon		45	272	61	10	10	398
Other registry				1		2	3
Total number of boats	870	3,057	1,321	310	113	166	5,837

¹ The owners of 952 of these vessels were issued fishing party permits.

TABLE 14

Origin of Shipments of Fresh Fish Into California During 1951

Shipped from	Shipped to					Total pounds
	Sacramento region	San Francisco region	Monterey region	Los Angeles region	San Diego region	
Continental United States: Miscellaneous fish.....	-----	19,760	-----	76,036	-----	95,796
Oregon, Washington, British Columbia and Alaska:						
Catfish.....	9,242	760	-----	-----	-----	10,002
Halibut, Pacific.....	-----	35,388	-----	473,504	-----	508,892
Lingcod.....	-----	26,036	-----	49,193	-----	75,229
Sablefish.....	-----	206,366	-----	96,049	-----	302,415
Salmon.....	-----	22,904	-----	1,385,560	-----	1,408,464
Sole.....	-----	-----	-----	1,627	-----	1,627
Miscellaneous fish.....	-----	-----	-----	66,627	-----	63,627
Mollusk:						
Clam ¹	-----	-----	-----	200	-----	200
South of the international boundary:						
Barracuda.....	-----	-----	-----	-----	28,207	28,207
Corbina, Mexican.....	-----	-----	-----	-----	3,965	3,965
Halibut, California.....	-----	-----	-----	-----	1,017	1,017
Rockfish.....	-----	-----	-----	-----	1,505	1,505
Sea bass, black.....	-----	-----	-----	-----	4,035	4,035
Sea bass, white.....	-----	-----	-----	-----	13,526	13,526
Shark.....	-----	-----	-----	-----	135	135
Tuna, albacore.....	-----	-----	-----	550	603	1,153
Tuna, bluefin.....	-----	-----	-----	-----	2,112	2,112
Tuna, skipjack.....	-----	-----	-----	49,880	-----	49,880
Tuna, yellowfin.....	-----	-----	-----	683,127	-----	683,127
Yellowtail.....	-----	-----	-----	4,445	16,429	20,874
Miscellaneous fish.....	-----	-----	-----	-----	204	204
Mollusk:						
Clam, Pismo.....	-----	-----	-----	1,287,724	777,200	2,064,924
Mussel.....	-----	-----	-----	2,167	-----	2,167
South America:						
Bonito.....	-----	2,194	4,664	-----	-----	6,858
Tuna, skipjack.....	-----	44,322	327,238	73,079	-----	444,639
Tuna, yellowfin.....	-----	909,311	1,208,184	8,815,072	1,749,520	12,682,087
Japan:						
Tuna, albacore.....	-----	5,522,576	-----	11,936,320	60,842	17,519,738
Tuna, mebachi.....	-----	30,000	-----	-----	-----	30,000
Tuna, skipjack.....	-----	216,036	-----	1,944,641	95,628	2,256,305
Tuna, yellowfin.....	-----	20,000	-----	37,201	-----	57,201
Mollusk:						
Clam, Japanese ¹	-----	22,250	-----	-----	-----	22,250
Total pounds.....	9,242	7,077,903	1,540,086	26,983,002	2,754,928	38,365,161

¹ Cleaned weight, no conversion factor available.

TABLE 14—Continued
Origin of Shipments of Fresh Fish Into California During 1951

	Pounds		Pounds
Recapitulation:			
Barracuda.....	28,207	Sole.....	1,627
Bonito.....	6,858	Tuna, albacore.....	17,520,891
Catfish.....	10,002	Tuna, bluefin.....	2,112
Corbina, Mexican.....	3,965	Tuna, mebachi.....	30,000
Halibut, California.....	1,017	Tuna, skipjack.....	2,750,824
Halibut, Pacific.....	508,892	Tuna, yellowfin.....	13,422,415
Lingcod.....	75,229	Yellowtail.....	20,874
Rockfish.....	1,505	Miscellaneous fish.....	162,627
Sablefish.....	302,415	Mollusk:	
Salmon.....	1,408,464	Clam ¹	200
Sea bass, black.....	4,035	Clam, Japanese ¹	22,250
Sea bass, white.....	13,526	Clam, Pismo.....	2,064,924
Shark.....	135	Mussel.....	2,167
		Total pounds.....	38,365,161

¹ Cleaned weight, no conversion factor available.

TABLE 15
Origin of the Commercial Fish Landings and Shipments Into California During 1951

Species	Fishing boat landings				Shipments ¹	Total pounds of fishing boat landings and shipments combined
	California	North of the state boundary	South of the international boundary	Total fishing boat landings		
Anchovy.....	6,954,852	-----	-----	6,954,852	-----	6,954,852
Barracuda.....	669,823	-----	1,436,913	2,106,736	28,207	2,134,943
Bonito.....	54,047	-----	722,756	776,803	6,858	783,661
Cabezone.....	23,857	-----	-----	23,857	-----	23,857
Cabrilla.....	-----	-----	391,770	391,770	-----	391,770
Carp.....	932,319	-----	-----	932,319	-----	932,319
Catfish.....	238,126	-----	-----	238,126	10,002	248,128
Corbina, Mexican.....	-----	-----	-----	-----	3,965	3,965
Flounder.....	1,118,279	10,548	-----	1,128,827	-----	1,128,827
Flying fish.....	53,451	-----	-----	53,451	-----	53,451
Grouper.....	-----	-----	583,740	583,740	-----	583,740
Hake.....	24,972	-----	-----	24,972	-----	24,972
Halibut, California.....	643,279	-----	222,654	865,933	1,017	866,950
Halibut, Pacific.....	86,749	-----	-----	86,749	508,892	595,641
Herring, Pacific.....	4,917,643	-----	-----	4,917,643	-----	4,917,643
Kingfish.....	681,950	-----	246	682,196	-----	682,196
Lingcod.....	1,657,546	14,568	-----	1,672,114	75,229	1,747,343
Mackerel, jack.....	89,838,095	-----	-----	89,838,095	-----	89,838,095
Mackerel, Pacific.....	33,518,435	-----	-----	33,518,435	-----	33,518,435
Mullet.....	107,833	-----	-----	107,833	-----	107,833
Perch.....	233,748	-----	6,423	240,171	-----	240,171
Pike.....	876	-----	-----	876	-----	876
Pompano, California.....	64,224	-----	-----	64,224	-----	64,224
Rock bass.....	81,098	-----	207,474	288,572	-----	288,572
Rockfish.....	10,928,309	51,148	12,595	10,992,052	1,505	10,993,557
Sablefish.....	2,535,813	49,123	137	2,585,073	302,415	2,887,488
Salmon.....	7,085,603	107,098	-----	7,192,701	1,408,464	8,601,165
Sand dab.....	542,921	900	-----	543,821	-----	543,821
Sardine.....	328,892,130	-----	601	328,892,731	-----	328,892,731
Sculpin.....	101,087	-----	350	101,437	-----	101,437
Sea bass, black.....	8,590	-----	268,894	277,484	4,035	281,519
Sea bass, white.....	955,145	-----	577,884	1,533,029	13,526	1,546,555
Seatrout, greenling.....	583	-----	-----	583	-----	583
Shad.....	606,191	-----	-----	606,191	-----	606,191
Shark.....	796,823	-----	45,501	842,324	135	842,459

Sheepshead	57,209			4,201	61,410	61,410
Sierra				19,608	19,608	19,608
Skate	84,634			84,634	84,634	81,634
Snelt	1,095,504				1,095,504	1,095,504
Sole	17,403,137		821,759		18,224,896	18,226,523
Splittail	669				669	669
Swordfish, broadbill	197,397			30,637	228,034	228,034
Tomcod	2,018				2,018	2,018
Tuna, albacore	13,284,606		9,150	17,621,586	30,915,342	48,436,233
Tuna, black skipjack				7,240	7,240	7,240
Tuna, bluefin	887,185			3,025,209	3,862,394	3,864,506
Tuna, mebachi						30,000
Tuna, skipjack	590			115,886,258	115,886,848	118,637,672
Tuna, yellowfin				160,246,175	160,246,175	173,668,580
Turbot	107,314		2,769		110,083	110,083
Wahoo				1,505	1,505	1,505
Whitebait	162,054				162,054	162,054
Whitefish, ocean	12,903			5,295	18,198	18,198
Yellowtail	14,444			4,655,282	4,669,726	4,690,600
Miscellaneous fish	156,972		1,765	4,186	162,923	325,550
Crustacean:						
Crab	11,566,901		1,452		11,568,353	11,568,353
Crab, rock					22,592	22,592
Lobster, spiny	824,611			645,556	1,470,167	1,470,167
Prawn	2,694				2,694	2,694
Shrimp	931,323				931,323	931,323
Mollusk:						
Abalone	4,084,115				4,084,115	4,084,115
Clam ²	38,153				38,153	38,353
Clam, gaper	3,412				3,412	3,412
Clam, jackknife	29,648				29,648	29,648
Clam, Japanese ²						22,250
Clam, Pismo						2,064,924
Clam, Washington	5,295				5,295	5,295
Mussel	196				196	2,363
Octopus	29,200				29,200	29,200
Oyster, eastern	178,716				178,716	178,716
Oyster, native	17,603				17,603	17,603
Oyster, Pacific	133,700				133,700	133,700
Squid	12,382,158			711	12,382,869	12,382,869
Total pounds	558,021,350	1,070,280	306,631,387	865,723,017	38,365,161	904,088,178

¹ For origin of shipments refer to Table 14.² Cleaned weight, no conversion factor available.

TABLE 16
Monthly Landings and Shipments Into California During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings:													
Anchovy.....	34,915	518,655	195,904	335,987	266,943	271,833	609,470	304,223	2,624,450	681,463	1,005,164	105,845	6,954,852
Barracuda.....	94,321	231,700	316,479	136,503	164,858	318,427	197,615	91,832	53,306	210,789	160,405	130,401	2,106,733
Bonito.....	1,125	2,241	7,252	132	243	19,035	14,390	104,260	207,904	398,781	2,127	36,512	776,893
Cabezone.....	1,331	1,602	2,620	1,731	559	1,614	496	3,392	3,166	660	4,169	23,857	23,857
Cabrilla.....	32,018	72,007	55,487	36,231	9,275	62,402	7,646	4,653	18,718	39,611	21,933	31,739	391,770
Carp.....	52,055	89,476	146,141	85,459	70,255	67,678	108,726	61,787	88,140	55,146	61,879	48,567	932,319
Catfish.....	20,674	6,768	11,960	29,988	482				40,998	41,260	45,430	40,568	238,126
Flounder.....	73,839	102,192	119,337	66,942	27,652	11,216	41,372	184,423	177,435	167,572	118,561	38,286	1,128,827
Flying fish.....				629	4,724	11,717	7,480	26,432	2,469				53,451
Groupers.....	33,523	71,376	66,021	54,700	19,773	41,402	18,189	10,158	32,150	44,145	57,111	135,192	583,740
Hake.....				735	6,665	300	9,975	5,012	2,285				24,972
Halibut, California.....	56,084	83,466	110,588	100,302	51,062	66,785	124,800	79,670	69,832	50,882	44,708	27,754	865,933
Halibut, Pacific.....	9,563	2,740	1,651	1,986	21,433	18,490	6,639	4,943	3,037	5,157	6,074	5,036	86,749
Herring, Pacific.....	1,655,910	2,007,116	18,963	75,155	90,775	850,830	155,950	20,510	107		7,735	34,592	4,917,643
Kingfish.....	49,685	62,708	82,820	53,573	60,694	54,874	34,619	48,225	33,490	42,607	138,269	20,632	682,196
Lingcod.....	26,150	39,564	74,533	134,687	145,156	225,572	275,727	227,869	248,339	131,600	83,565	56,292	1,672,114
Mackerel, jack.....	9,625,717	4,522,040	6,218,655	10,594,092	8,672,704	8,396,719	6,544,808	9,155,402	9,365,399	8,691,894	5,842,991	1,907,674	89,838,005
Mackerel, Pacific.....	648,294	202,478	189,806	1,144,226	210,645	349,045	2,121,912	6,666,136	2,783,980	15,210,767	3,638,792	336,354	33,518,435
Mullet.....	31,863	29,137							3,426		27,407	16,000	107,833
Perch.....	14,241	21,360	46,488	67,881	1,625	984	17,339	19,664	16,617	7,708	11,321	14,913	240,171
Pike.....	22	10	96		17					720		11	876
Pompano, California.....	6,872	798	14,419	11,643	760	2,140	714	2,655	5,381	10,121	6,845	1,871	64,224
Rock bass.....	30,675	24,419	21,099	7,784	25,093	42,220	26,122	12,707	12,306	11,076	60,869	13,602	288,572
Rockfish.....	782,593	765,292	954,747	897,340	954,041	968,011	1,117,748	1,050,882	1,271,703	934,162	722,082	573,451	10,992,052
Sablefish.....	90,445	154,716	195,354	302,111	263,770	330,457	284,223	230,905	337,319	215,762	121,362	58,559	2,585,073
Salmon.....	10,940	25,704	17,641	25,973	1,140,170	1,450,081	1,884,782	1,126,263	1,501,834		44	279	7,192,701
Sand dab.....	28,923	30,096	66,338	57,103	41,761	39,923	55,761	67,666	64,481	49,592	25,663	16,514	543,821
Scudine.....	71,624,938	2,639,040	177,453	268,885	465,571	570,666	350,486	15,856,433	5,571,344	171,081,217	38,974,674	18,141,424	328,892,731
Sculpin.....	5,109	7,153	10,261	16,273	11,103	17,907	12,000	9,058	2,340	4,062	4,958	1,213	101,437
Sea bass, black.....	20,163	13,579	10,482	10,609	7,447	18,557	6,812	23,426	11,768	75,780	51,902	23,959	277,484
Sea bass, white.....	10,755	55,870	90,824	46,354	84,135	154,927	136,801	105,025	277,398	287,234	146,278	47,329	1,533,029
Seatrout, greenling.....	13	115	65		24	12		324	30				583
Shad.....			115	108,599	494,296	3,181							606,191

Shark	14,773	17,693	281,299	28,150	76,534	119,421	39,674	37,508	37,656	92,983	47,823	48,810	842,324
Sheepshead	7,247	6,993	1,712	820	926	1,174	2,931	919	2,226	7,200	14,927	14,335	61,410
Sierra	441			755					410	7	17,443	552	19,608
Skate	10,235	10,890	11,071	10,757	7,839	1,902	1,121	4,243	6,786	5,472	17,443	5,554	84,634
Snelt	41,749	57,436	70,005	87,867	54,996	127,888	103,824	174,112	146,353	88,894	82,143	60,237	1,092,504
Sole	718,521	597,316	940,972	1,287,385	1,263,177	2,321,932	2,190,114	2,322,417	2,128,072	2,223,354	1,434,530	797,106	18,224,896
Splittail	217	153	239									60	669
Swordfish, broadbill	900												228,034
Tomcod	600		160	315	200	4,790	55,198	104,280	47,478	13,243	2,145		54
Tuna, albacore	3,666					157,917	7,488,951	14,317,692	4,450,082	3,813,082	648,359	35,593	30,915,342
Tuna, black skipjack						7,240				324	133		7,240
Tuna, bluefin	251,308	69,125		700			789,231	1,256,925	1,374,574	80,760	25,832	13,939	3,862,394
Tuna, skipjack	16,618,854	11,890,209	6,814,714	4,088,142	12,303,791	20,253,065	13,613,414	11,092,756	7,815,155	5,121,605	4,116,941	2,158,203	115,896,848
Tuna, yellowfin	12,511,007	9,594,662	9,093,242	3,518,271	12,973,297	23,071,788	19,723,282	19,590,546	21,205,577	10,444,917	13,389,578	5,130,001	160,246,175
Turbot	7,521	9,477	21,291	19,759	13,045	3,162	3,645	11,141	8,163	6,528	4,106	1,645	110,083
Walrus	1,505												1,505
Whitebait	4,688	25,347	12,536	28,631	28,857	32,514	17,030	10,616	1,668	100	67		162,054
Whitefish, ocean	2,546	4,370	2,646	473	448	303	160	570	678	1,734	3,992	278	18,198
Yellowtail	53,570	40,661	196,048	312,668	354,944	1,144,477	1,187,561	667,878	208,869	241,641	99,238	162,173	4,669,726
Miscellaneous fish	4,183	6,538	18,094	16,259	21,755	12,645	18,818	13,411	12,141	21,616	10,126	7,037	162,923
Crustacean:													
Crab	2,124,745	1,717,596	1,175,689	1,904,706	778,461	282,848	302,482			297	1,615,075	1,666,454	11,568,353
Crab, rock	638	907	571	2,392	560	830	2,130	3,110	1,610	3,507	4,269	2,070	22,592
Lobster, spiny	392,324	83,822	51,765							278,281	516,638	147,337	1,470,167
Prawn	438	613	245	833	7	30				121	210	197	2,694
Shrimp	27,556	26,914	26,828	56,953	48,098	68,535	127,172	174,468	173,446	114,826	57,633	28,894	931,323
Mollusk:													
Abalone	175,741		263,503	525,830	329,321	445,889	293,533	353,662	483,364	379,075	401,332	482,865	4,081,115
Clam	1,487		2,464	3,135	4,555	5,979	6,502	5,122	3,445	1,987	1,404	633	38,153
Clam, gaper	620	480	520	780	620	100	100	80	100			12	3,412
Clam, jackknife	1,266	809	1,401	2,402	3,512	4,482	3,694	3,992	4,217	2,367	929	577	29,648
Clam, Washington	312	1,138	1,228	2,377	45							195	5,295
Mussel	60	110	26										196
Octopus	3,007	2,910	4,400	5,471	2,521	1,082	2,863	1,110	313	1,542	2,279	1,702	29,200
Oyster, eastern	17,243	18,526	17,689	15,338	13,311	11,491	10,556	13,527	5,500	18,051	16,591	20,593	178,716
Oyster, native				448	7,922	3,070	4,046	2,425	240	152			17,603
Oyster, Pacific													133,700
Squid	12,923	16,173	15,337	15,780	9,403	10,228	8,028	9,118	3,500	12,275	10,578	10,357	10,357
	50	3,120	82,239	7,814,316	2,455,385	857,566	574,765			820	106,434	350,764	12,382,869
Total pounds	118,084,705	35,986,639	28,253,014	26,690,252	49,416,572	64,926,262	61,512,618	86,343,338	63,049,991	224,400,015	74,042,646	33,016,965	865,723,017

TABLE 16—Continued
Monthly Landings and Shipments Into California During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Shipments: ¹													
Barracuda				1,440	375	343		15,162		9,464	1,178	245	28,207
Bonito	2,194			4,186	478						2,592	2,670	6,858
Catfish									1,938	2,802			10,002
Corbina, Mexican		2,005		1,960									3,965
Halibut, California		288			133	309	230					77	1,017
Halibut, Pacific	43,309	55,939	8,142	6,553	50,494	105,516	87,919	28,139	18,034	54,188		50,065	508,892
Lingcod		20,000				10,672	3,401	27,466	2,400	11,290			75,229
Rockfish								1,335		170			1,505
Sablefish		37,200	12,375	9,200	2,015	3,218	9,410	31,200	15,810	50,938	116,649	14,400	302,415
Salmon	92,899	138,587	97,055	67,441	186,362	241,810	68,739	137,754	99,087	96,229	55,823	106,669	1,408,484
Sea bass, black	50	210		1,896	1,007	872							4,035
Sea bass, white	2,944	670		1,822	15	764	6,692	619					13,526
Shark								135					135
Sole						27	1,600						1,627
Tuna, albacore	96,756	780,960	665,748	1,633,247	810,939	737,467	4,624,238	5,436,790	1,424,539	158,215	1,149,992		17,520,891
Tuna, bluefin							2,112						2,112
Tuna, mebach			30,000										30,000
Tuna, skipjack		2,050	31,020	10,687	12,943	388,099	171,079	200,082	1,455,760	162,953		315,551	2,750,824
Tuna, yellowfin	1,475,433	1,351,217	986,142	3,806,387	3,409,145	89,150	749,128	166,427	1,10,119	169,892	519,070		13,422,415
Yellowtail						20,874							20,874
Miscellaneous fish	30,040	55,008				55		5,375	48,302	160		23,707	162,627
Mollusk:													
Clam ²						200							200
Clam, Japanese ²								22,250					22,250
Clam, Pismo				355,101	422,096	7,092		171,424	360,088	84,096	393,272	271,752	2,061,924
Mussel						2,167							2,167
Total pounds	1,713,625	2,444,114	1,831,082	5,901,923	4,896,002	1,408,627	5,724,548	6,264,158	3,566,077	800,397	2,238,585	1,346,023	38,365,161
Grand total fishing boat landings and shipments	119,828,330	38,430,753	30,084,096	32,592,175	54,312,574	66,534,880	67,237,166	92,607,496	66,616,098	225,200,412	76,281,231	34,362,988	901,088,178

¹ For origin of shipments refer to Table 14.

² Cleaned weight.

TABLE 17
Monthly Landings of the Commercial Fishing Boats in the Eureka Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Carp.....	14,702	33,289	30,898	6,600	25,400	16,600	14,560	121,643	88,879	69,037	68,777	27,699	63,160
Flounder.....				36,302	2,401	3,997	18,158	107	216	38			515,792
Halibut, Pacific.....	40,524	1,328		132	17,568	9,444	614	1,025				10,113	28,119
Herring, Pacific.....	7,771	16,917	30,114	51,640	38,875	132,459	192,718	149,035	173,756	70,410	39,535	19,785	52,990
Langcod.....										190			923,015
Mackerel, jack.....								6,193	4,528	751	82		190
Percch.....	44	2,246	11,213	15,952	20		4,915	596,203	714,009	370,450	206,232	156,153	45,944
Rockfish.....	175,635	276,119	255,152	186,767	283,398	510,723	791,309	134,410	240,027	144,616	85,489	21,457	4,522,450
Sablefish.....	25,502	37,605	45,890	95,785	54,870	113,936	171,608	318,725	194,570				1,171,195
Salmon.....					247,394	508,003	626,575	16,459			1,477	1,645	1,895,267
Sand dab.....	6,204	12,925	12,206	7,776	6,342	13,480	17,032		16,232	9,304	394	725	121,172
Shark.....		84					70			500			1,773
Skate.....			121	42	2,857	25,091	62,468	109,353	52,666	7,602			163
Smelt.....				706				1,570,010	1,521,310	1,670,668	1,085,803	543,317	280,743
Sole.....	130,634	259,339	363,612	439,440	531,535	772,603	1,537,603						11,425,879
Tomcod.....	600							4,731	1,207,626	838,154			600
Tuna, albacore.....				995			933	365	1,342		86	150	2,051,494
Turbot.....	140	408	2,607	21,697	17,088	224	60	4,061		270			6,647
Whitebait.....	2,358	18,417	11,312	3,890		24,865	11,459		5,387	50			111,307
Miscellaneous fish.....	726	505	1,367		1,777	2,432	8,953	8,661		2,368	694	1,057	37,817
Crustacean:													
Crab.....	1,551,529	1,476,375	1,080,932	1,768,789	695,775	214,484	71,568					929,901	7,789,353
Mollusk:													
Clam, Washington.....	312	1,138	1,228	2,377	45			52	35			195	5,265
Octopus.....	695	920	805	103		45				70		116	2,841
Total pounds.....	1,957,376	2,137,615	1,847,517	2,638,993	1,925,345	3,348,386	3,539,683	3,041,033	4,220,583	3,184,478	1,488,574	1,712,613	31,033,196

TABLE 17—Continued
Monthly Landings of the Commercial Fishing Boats in the Eureka Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from waters north of the state boundary:													
Flounder		2,748		920					6,631	123	126		10,548
Lingcod		667	1,724	2,106	1,189	1,303	3,993	655	1,225	1,254	411		14,568
Rockfish		13,858	2,794	948	1,679	1,047	10,963	929	8,582	8,456	1,354	41	51,148
Sablefish			12	6,744	5,442	1,437	2,218	2,530	5,749	22,129	2,100	762	49,123
Salmon							86,929	10,636	9,533				107,098
Sand dab			411	195	6				60		228		900
Sole		19,179	31,528	134,373	122,359	65,728	117,118	24,765	94,178	143,216	57,046	12,269	821,759
Turbot			1,289	1,480									2,769
Miscellaneous fish				776	989								1,765
Crustacean:													
Crab		102	727	623									1,452
Total pounds		36,554	38,485	148,165	131,664	69,515	221,221	39,515	125,958	175,178	61,265	13,610	1,061,130
Grand totals, Eureka region	1,957,376	2,174,169	1,886,002	2,787,158	2,057,009	3,417,901	3,751,904	3,080,548	4,346,541	3,359,656	1,549,889	1,726,223	32,004,326

TABLE 18
Monthly Landings and Shipments of Commercial Fish Into the Sacramento Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Carp.....	52,035	89,476	145,941	78,859	42,124	51,078	86,464	48,665	84,650	52,946	51,079	41,417	834,764
Catfish.....	20,674	6,766	11,960	29,988	482	-----	-----	-----	40,998	41,260	45,430	40,568	238,126
Flounder.....	-----	795	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	795
Pike.....	22	10	96	-----	17	-----	-----	-----	1,129,515	-----	44	11	156
Salmon.....	10,940	25,704	17,641	25,973	39,895	2,055	-----	91,125	-----	-----	-----	279	1,343,171
Shad.....	-----	-----	-----	108,599	494,296	3,181	-----	-----	-----	-----	-----	-----	606,076
Smelt.....	-----	-----	-----	-----	-----	915	935	-----	-----	-----	-----	60	1,850
Spittail.....	217	153	239	-----	-----	-----	-----	-----	3,237	21,625	3,165	-----	669
Tuna, albacore.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	28,027
Total pounds.....	83,918	122,904	175,877	243,419	576,814	57,229	87,399	139,790	1,258,400	115,831	99,718	82,335	3,043,634
Shipments:													
Catfish.....	-----	-----	-----	-----	-----	-----	-----	-----	1,938	2,802	2,592	1,910	9,242
Total pounds.....	-----	-----	-----	-----	-----	-----	-----	-----	1,938	2,802	2,592	1,910	9,242
Grand totals, Sacramento region.....	83,918	122,904	175,877	243,419	576,814	57,229	87,399	139,790	1,260,338	118,633	102,310	84,245	3,052,876

¹ See Table 14 for origin of shipments.

TABLE 19
Monthly Landings and Shipments of Commercial Fish Into the San Francisco Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Anchovy.....			1,895	30,139	16,612	24,343	15,660	19,125	58,452	79,354	38,520		284,100
Cabezone.....		249	241	190				268	100	30	185		1,263
Carp.....								2,782	40				3,884
Flounder.....	59,137	63,843	85,423	26,553	24,843	6,198	23,053	61,938	80,963	98,040	48,835	10,543	580,369
Hake.....				735	6,665	300	9,975	5,012	2,985		675		24,972
Halibut, California.....	1,062	304	183	206	430	1,005	670	537	314	569		560	6,515
Halibut, Pacific.....	9,563	2,740	1,651	1,854	3,865	9,046	6,025	4,836	2,821	5,119	6,071	5,036	58,630
Herring, Pacific.....	1,615,386	2,004,238	18,963	80	3,865	80	15	1,300	107		7,735	24,479	3,672,383
Kingfish.....	195	37	597	1,072	1,321	506	725	1,396	1,216	558	240	30	7,893
Lingcod.....	11,280	18,054	28,980	61,969	83,030	71,700	72,623	66,287	66,266	52,303	27,383	23,737	583,612
Mackerel, jack.....							67	135					202
Perch.....	6,553	9,981	12,977	31,509		964	4,002	6,550	4,174	504	1,191	418	78,833
Pompano, California.....			27	215	52				1,082				1,376
Rockfish.....	188,084	81,285	166,563	195,870	240,025	109,180	105,645	182,153	265,024	242,016	221,983	206,417	2,204,245
Sablefish.....	9,296	645	15,156	38,471	38,471	75,194	24,893	37,614	34,108	1,240	2,384	14,625	265,858
Salmon.....					695,556	825,832	948,075	528,165	167,772				3,165,400
Sand dab.....	18,630	7,019	34,477	33,872	21,058	14,732	23,500	41,576	33,419	26,492	16,694	8,032	279,651
Sardine.....	411			32				164,000	381	300		20	165,144
Sea bass, white.....				108				447	1,563	26	40	223	2,407
Seatrout, greenling.....								324					324
Shark.....	5,545	6,366	2,846	100	59	483	1,810	2,245	16,414	34,642	6,484	3,483	80,507
Skate.....	7,755	5,890	7,800	8,300	5,950	600	1,050	4,050	4,850	3,110	7,690	5,050	62,095
Smelt.....	7,019	32,510	32,828	77,206	36,838	46,827	24,755	32,290	64,626	43,931	7,415	14,208	420,363
Sole.....	536,383	260,621	382,538	474,492	397,270	331,712	413,254	646,247	426,310	345,637	250,656	216,033	4,654,163
Swordfish, broadbill.....										530			530
Tomcod.....			160	315	200				232		133	54	1,418
Tuna, albacore.....							869	168,326	1,050,716	1,204,356	221,305		2,645,772
Turbot.....	6,949	8,942	16,219	17,235	13,415	2,300	3,585	10,776	6,821	6,178	4,020	1,495	97,935
Whitebait.....	1,349	6,351	710	3,643	9,178	7,649	4,787	3,946	404	50	67		38,134
Miscellaneous fish.....	947	1,268	12,205	6,341	15,130	4,356	4,666	1,360	1,368	3,442	2,831	2,777	56,691

Crustacean:											
Crab.....	517,745	182,818	71,797	89,097	58,575	63,154	227,217	1,000	1,612,540	728,974	3,551,917
Crab, rock.....	27,556	26,914	26,828	56,953	48,098	68,535	127,172	174,468	57,633	28,894	1,000
Shrimp.....											931,323
Mollusk:											
Abalone.....				4,125	385		688	1,596	881	330	8,005
Octopus.....	1,233	788	1,712	3,506	1,820	428	1,439	807	217	285	12,662
Oyster, eastern.....	17,243	18,526	17,689	15,338	13,311	11,491	10,856	13,527	5,500	16,591	178,716
Oyster, native.....				448	7,222	3,070	4,046	2,425	240	152	17,693
Oyster, Pacific.....	12,689	16,017	15,337	14,922	9,403	10,228	8,028	9,118	3,500	10,578	132,452
Total pounds.....	3,062,030	2,755,406	955,802	1,168,657	1,748,782	1,692,911	2,069,852	2,196,636	2,475,113	1,326,308	24,317,347
Fishing boat landings from waters south of the international boundary:											
Grouper.....											6,700
Tuna, albacore.....						6,700	6,582				6,582
Tuna, skipjack.....	1,420		3,412								4,332
Tuna, yellowfin.....	26,380		175,618								201,998
Total pounds.....	27,800		179,030			6,700	6,582				220,112
Shipments:											
Bonito.....	2,194									760	2,194
Catfish.....										8,000	35,388
Halibut, Pacific.....	16,905		4,400	6,083			3,401	11,345	11,280		26,036
Lingcod.....											206,366
Sablefish.....					1,769			31,200	50,938	116,649	22,904
Salmon.....	1,627	2,119		3,250	408		1,532,980	1,682,200	4,614	5,200	5,522,576
Tuna, albacore.....									158,215	1,149,992	30,100
Tuna, mebacki.....			30,000								260,358
Tuna, skipjack.....			31,620			184,416	44,322				923,311
Tuna, yellowfin.....	65,136	117,804	120,821	106,160	135,340	83,440	390,610				19,760
Miscellaneous fish.....									19,600		
Mollusk:											
Clam, Japanese ¹								22,250			22,250
Total pounds.....	85,862	119,923	186,841	115,493	137,517	267,856	1,881,313	1,746,995	296,289	8,760	7,077,903
Grand totals, San Francisco region.....	3,175,692	2,875,329	1,321,673	1,284,150	1,886,299	1,967,467	3,957,747	3,943,631	2,521,642	1,355,068	31,615,362

¹ See Table 14 for origin of shipments.² Cleaned weight.

TABLE 20
Monthly Landings and Shipments of Commercial Fish Into the Monterey Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Anchovy.....	27,475	480,560	---	7,490	46,080	2,900	307,240	135,903	2,533,276	554,394	865,889	88,850	5,050,057
Cabezone.....	948	1,106	1,767	1,509	875	1,553	372	3,114	3,066	503	1,757	2,318	18,978
Flounder.....	---	---	3,053	2,293	215	805	146	842	888	50	61	44	6,840
Halibut, California.....	6,485	4,230	---	75,075	3,063	17,873	15,854	7,057	1,390	369	2,332	417	64,416
Herring, Pacific.....	---	1,550	---	22,395	90,775	850,750	155,935	18,185	---	21,553	14,123	10,602	1,192,270
Kingfish.....	25,715	27,037	---	20,097	20,825	16,744	17,537	10,558	15,278	5,342	12,225	8,108	222,441
Langcod.....	5,509	2,922	11,332	17,202	20,699	19,069	7,897	10,558	6,717	115,682	123,303	237,605	127,106
Mackerel, jack.....	835	17,904	10,997	139,550	14,300	1,300	20,784	88,413	6,717	55,802	24,559	943	777,480
Mackerel, Pacific.....	3,519	9,289	705	53,955	1,622	---	138,637	7,915	60,972	360	548	25	357,918
Perch.....	1,290	1,596	9,286	13,670	---	---	7,705	3,136	---	180	180	33	37,864
Pompano, California.....	6,213	382	10,240	10,283	105	1,790	506	264	655	928	25	56	31,447
Rockfish.....	303,447	263,651	405,762	387,377	306,215	279,899	165,723	225,445	224,395	251,966	237,161	125,202	3,176,243
Sablefish.....	51,658	107,504	122,484	177,258	154,939	136,297	85,271	56,051	53,562	43,399	29,770	20,007	1,038,200
Salmon.....	---	---	---	---	156,819	121,413	223,181	177,602	113	---	---	---	679,128
Sand dab.....	2,666	6,549	15,512	12,558	11,720	10,540	14,581	8,777	13,360	13,776	6,535	5,164	121,041
Sardine.....	99,751	29,420	51,390	27,898	274,635	52,550	12,255	730,053	106,420	225	304,158	65,315	1,757,070
Sea bass, white.....	---	7	---	---	---	---	5,518	---	32,360	20	764	19	38,688
SeatROUT, greenling.....	13	115	65	---	24	12	---	---	30	---	---	---	259
Shad.....	---	---	115	---	---	---	1,478	1,115	1,179	452	981	856	115
Shark.....	258	211	435	95	66	1,745	---	---	---	---	---	---	8871
Skate.....	1,088	4,296	2,569	920	---	222	20	---	1,050	425	266	200	11,356
Snelt.....	14,089	16,350	21,090	1,944	4,961	46,064	11,324	23,501	17,611	25,610	8,581	6,464	197,572
Sole.....	37,763	44,539	106,790	142,565	107,126	53,283	85,697	62,708	63,729	43,348	31,118	19,291	797,907
Swordfish, broadbill.....	---	---	---	---	---	---	7,113	349	388,204	192	204,931	---	511
Tuna, albacore.....	---	---	350	---	---	---	---	1,230,220	---	1,136,274	---	---	2,966,742
Turbot.....	981	579	514	3,291	2,591	---	784	2,609	1,264	---	600	---	350
Whitebat.....	---	71	458	---	499	---	---	275	189	6,613	---	---	12,613
Miscellaneous fish.....	---	---	---	---	---	---	58	---	---	---	---	---	8,705
Crustacean:													
Crab.....	1,249	2,403	3,245	1,923	567	83	---	---	---	---	1,787	3,583	14,898
Prawn.....	438	613	245	853	7	30	---	---	---	121	210	197	2,694

Mollusk:	620	480	520	780	620	100	100	80	100			12	3,412
Clam, gaper	60	110	26										196
Mussel	904	1,104	1,792	1,816	571	474	1,292	251	99	1,255	1,018	1,234	12,710
Octopus			1,320	81,904	7,468,411	2,082,180	852,100	560,895	137,330	820	96,694	350,764	11,632,468
Squid	50												
Total pounds	593,004	1,024,578	805,297	1,135,266	8,688,630	3,697,686	2,139,020	3,366,153	3,671,912	2,278,990	1,970,416	947,644	30,368,596
Fishing boat landings from waters south of the international boundary:													
Bonito													7,519
Tuna, bluefin									7,519				67,095
Tuna, skipjack									67,095				89,658
Tuna, yellowfin									89,658				18,848
Total pounds									18,848				183,120
Shipments:													
Bonito													4,664
Tuna, skipjack				4,186	478					1,000		315,551	327,238
Tuna, yellowfin				10,687	375,345	5,719				169,892		560,287	1,208,184
Total pounds				111,814	375,823	5,719				170,892		875,838	1,540,086
Grand totals Monterey region	593,004	1,024,578	805,297	1,297,080	9,064,453	3,703,405	2,139,020	3,366,153	3,855,032	2,449,882	1,970,416	1,823,482	32,091,802

¹ See Table 14 for origin of shipments.

TABLE 21
Monthly Landings of the Commercial Fishing Boats in the Santa Barbara Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Anchovy.....		456	44,987	13,000	42,000	139,254	5,215	2,100		45,429		26	201,569
Barrecauda.....									2,842			3,412	94,574
Bonito.....		247	612	32	84	61	124			37	185	1,851	3,616
Cabezone.....		1,509	2,131		189	162	12			260	255		4,518
Flounder.....		19,235	19,032	18,708	15,205	7,873	11,948	9,735	15,309	20,317	34,729	22,080	214,468
Haliout, California.....	20,267							1,000	53	149	145	57	4,094
Kingfish.....	555	878	102	882	130	133		824	1,463	1,618	2,744	4,553	21,124
Lingcod.....	1,433	823	2,209	1,711	1,297	1,021	1,423						
Mackerel, jack.....	773,209	97,000	248,000	215,000	9	1,030,645	1,154,625	34,480	77,073	841,028	723,022	13,264	5,207,355
Mackerel, Pacific.....	83,980		280			5,720	31,160	1,375		489,287	117,875	47,000	776,677
Perch.....	387	232	671	1,373			20	200	709	2,027	1,957	1,782	9,398
Pompano, California.....										6,656			6,656
Rock bass.....	7,228	2,587	648	562	1,289	6,313	3,002	4,642	3,504	1,561	1,714	719	33,769
Rockfish.....	35,008	41,499	48,025	33,251	33,702	13,788	10,983	13,736	9,819	6,407	6,995	14,873	268,146
Sablefish.....			325			38						778	1,441
Salmon.....					506	1,000	22		331				1,869
Sand dab.....	76	16	283	205	519	110	236	313	554	456	50	55	2,843
Sardine.....	10,520,601			21,000		137,200	358,600	14,771,725	4,747,260	30,447,482	11,166,359	2,802,626	74,972,853
Sculpin.....	145	75		62	215					25		115	637
Sea bass, black.....			204		34	333	84	36	80	364	47		1,191
Sea bass, white.....	8,707	30,632	24,943	10,855	14,975	12,405	28,658	28,743	42,029	69,539	30,204	10,047	311,737
Shark.....	633	3,493	267,185	13,648	29,422	39,502	11,026	5,952	3,372	24,135	6,172	8,575	413,175
Sheepshead.....	4,642	5,440	702	6	518	654	1,702	115		1,681	793	2,233	18,486
Skate.....	280	212		454	353	20			167	1,220	738	64	3,508
Smelt.....	79	35	145	95	780			80					1,214
Sole.....	13,567	13,513	56,059	95,345	103,842	94,308	34,422	18,369	22,519	20,433	9,868	6,181	488,426
Swordfish, broadbill.....							930	18,468	10,338	322			30,058
Tuna, albacore.....							8,910	77,985	35,104	12,749	14,977	6,062	155,787
Tuna, bluefin.....								412					412
Turbot.....	432	127	826	49	230	638				80			2,382
Whitefish, ocean.....	673	4,046			200	25			73	690	2,315		8,022
Miscellaneous fish.....	192	14	55	1,566	551	1,166	384	210	435	399	1,239	590	6,831

[illegible]

TABLE 22
Monthly Landings and Shipments of Commercial Fish Into the Los Angeles Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Anchovy	7,440	38,095	194,009	285,358	162,251	97,141	280,228	147,095	29,320	47,715	100,755	16,995	1,406,402
Barbauda	25	103	7,004	2,832	29,851	131,904	21,320	10,719	18,986	68,992	16,218	184	308,138
Bonito				4	61		9,861	428	91	2,887	6,665	24,853	44,850
Carp			200		2,731		4,000	10,340	3,090	2,200	10,800	7,150	40,511
Flounder		8	45	187	4	54			104	62	507		975
Flying fish				629	4,724	11,717	7,480	26,194	2,469				53,213
Halibut, California	23,391	43,092	70,072	51,006	27,059	18,802	19,647	8,575	2,794	5,526	728	617	271,309
Kingfish	20,788	32,224	52,223	28,509	37,387	36,794	13,309	28,832	12,985	17,325	122,341	9,709	412,426
Lingcod	157	60	161	59	53		73	160		132	1,267	68	2,190
Mackerel, jack	8,851,673	4,407,136	5,959,658	10,239,542	8,658,395	7,364,774	5,669,332	9,032,374	9,281,505	7,707,794	4,981,576	1,656,805	83,810,564
Mackerel, Pacific	560,392	101,429	189,101	1,089,700	201,480	316,041	1,950,014	6,656,028	2,718,233	14,529,125	3,461,678	226,828	32,000,049
Mullet										3,426			3,426
Perch	5,717	7,305	12,341	5,377	1,605	20	186	2,060	6,846	3,225	5,519	10,648	61,749
Pike										720			720
Pompano, California	669	416	4,152	1,150	603	350	208	2,391	2,611	2,537	6,820	1,815	23,712
Rock bass	589	236	2,440	5,359	7,258	9,463	5,921	2,641	1,795	1,900	788	827	39,217
Rockfish	71,324	81,128	74,144	91,895	86,056	51,174	32,657	32,347	45,517	50,935	40,062	67,916	725,155
Sablefish	3,989	8,962	11,457	10,092	10,048	3,645	233	300	3,873	4,378	1,619	793	59,419
Salmon						451						451	451
Sand dab	1,347	3,587	3,419	2,497	2,116	1,061	379	441	638	564	679	1,298	18,026
Sardine	58,578,280	2,314,448	126,063	216,055	179,805	380,315	157,290	189,535	704,188	142,713,931	26,644,935	14,366,274	246,572,019
Sculpin	4,266	4,807	5,336	10,174	10,245	17,869	11,433	8,708	2,210	3,520	4,030	1,048	83,676
Sea bass, black	20	50		40	323	585	1,017	895	1,218	355	576		5,079
Sea bass, white	1,594	19,889	14,888	22,895	55,490	116,272	60,106	31,576	45,840	35,081	61,207	18,488	483,326
Shark	2,076	5,736	7,927	6,231	23,145	37,658	12,323	7,806	4,405	12,294	4,439	8,939	132,919
Sheepshead	1,380	863	738	797	370	220	894	793	1,186	945	2,629	1,448	12,263
Skate	1,112	492	548	574	1,236	1,060	51	193	719	717	70	240	7,012
Snelt	18,282	6,051	13,830	7,213	9,560	8,926	4,342	7,813	11,340	11,741	66,147	38,120	293,365
Sole	57	21	445	1,170	1,045	1,288	2,060	105	26	15	4	15	6,251
Swordfish, broadbill						4,790	42,715	56,470	30,660	10,088	725		145,448
Tuna, albacore						13,871	1,196,526	1,829,967	388,070	126,280	135,556	29,531	3,719,932
Tuna, bluefin	151						360,000	375,616	8,963	24,583	25,750		794,912

TABLE 22—Continued
Monthly Landings and Shipments of Commercial Fish into the Los Angeles Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Tuna, bluefin	251,308	69,125		700			400,807	827,551	1,058,399			1,134	2,569,004
Tuna, skipjack	6,137,167	4,155,727	3,308,647	3,421,696	6,874,079	9,429,509	5,382,921	5,473,184	4,435,015	1,732,776	1,412,992	1,829,829	53,593,542
Tuna, yellowfin	3,691,457	3,478,311	4,454,424	3,245,127	6,515,716	9,331,868	9,632,440	10,372,081	9,925,843	1,898,309	6,247,134	4,968,917	73,691,657
Whitefish, ocean			49			170				290			509
Yellowtail	13,272	7,324	101,106	277,720	281,673	986,233	1,081,732	601,958	174,274	63,526	71,281	112,193	3,832,292
Miscellaneous fish				60			150		600	413	1,685	145	3,063
Total pounds	10,166,681	8,032,492	8,174,941	7,136,179	13,736,473	19,907,919	17,541,572	19,758,623	16,331,087	4,362,359	8,082,383	7,230,886	140,444,595
Shipments:													
Halibut, Pacific	26,404	55,939	3,742	470	50,494	105,510	87,919	28,139	18,034	54,188		42,665	473,504
Lingcod		20,000				10,672		16,121	2,400				49,163
Sablefish		37,200	12,375	9,200	246	3,218	9,410		10,000			14,400	96,040
Salmon	91,272	136,468	97,055	64,191	185,954	241,819	68,739	157,754	94,473	90,543	50,623	106,689	1,385,560
Sole						27	1,600						1,627
Tuna, albacore	96,756	780,960	665,748	1,635,247	750,097	737,467	3,090,655	3,754,590	425,350				11,936,870
Tuna, skipjack		2,050			12,943	203,683	126,757	200,082	1,360,132	161,953			2,067,600
Tuna, yellowfin	1,410,297	1,233,413	865,321	3,603,286	1,148,940	448,518	448,518	166,427	140,119		519,079		9,535,400
Yellowtail						4,445							4,445
Miscellaneous fish	30,005	55,008				35		5,295	28,702			23,618	142,663
Mollusk:													
Clam						200							200
Clam, Pismo						7,092		171,424	360,988	84,096	393,272	271,782	1,287,724
Mussel						2,167							2,167
Total pounds	1,654,734	2,321,038	1,644,241	5,312,394	2,148,674	1,316,335	3,833,598	4,499,832	2,439,298	390,780	962,974	459,104	20,983,002
Grand totals, Los Angeles region	80,121,800	17,461,668	16,748,283	24,902,562	26,001,946	30,494,049	31,406,248	42,932,648	32,308,495	170,463,735	45,138,002	24,513,130	542,492,566

¹ See Table 14 for origin of shipments.

TABLE 23
Monthly Landings and Shipments of Commercial Fish Into the San Diego Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Fishing boat landings from California waters:													
Anchovy.....	510	.....	.....	25,101	104,908	8,195	1,127	162	3,402	8,692	859	48	12,724
Barracuda.....	.....	.....	.....	.....	.....	93,275	32,091	35	1,465	168	.....	1,183	267,111
Bonito.....	.....	.....	.....	.....	182	864	406	238	5	.....	.....	.....	2,843
Flying fish.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	238
Halibut, California.....	4,879	8,436	16,017	27,820	5,305	3,612	3,586	1,683	541	5,144	5,612	3,946	86,581
Kingfish.....	2,422	2,532	7,503	3,907	1,031	697	2,808	6,402	3,953	3,022	1,420	231	35,096
Lingcod.....	.....	116	13	.....	13	20	.....	50	287	.....	.....	.....	499
Mackerel, jack.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42,304
Mackerel, Pacific.....	403	91,760	.....	291	7,543	27,284	8,101	818	14,775	27,200	15,000	.....	382,791
Mullet.....	31,863	29,137	.....	.....	.....	.....	.....	.....	.....	136,553	34,680	61,583	104,407
Pompano, California.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,407	16,000	1,033
Rock bass.....	52	.....	72	635	1,733	1,399	1,967	221	506	635	75	817	32,070
Rockfish.....	5,329	5,478	2,307	1,232	2,671	2,200	468	69	2,793	3,872	3,742	1,909	32,070
Salmon.....	.....	.....	.....	.....	.....	327	.....	.....	.....	.....	.....	.....	327
Sand dab.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	188
Sardine.....	2,425,895	295,772	.....	.....	1,131	.....	2,341	4,120	10,095	919,279	859,222	907,189	5,425,014
Sculpin.....	668	2,271	4,925	6,037	643	38	567	.....	130	517	928	50	16,774
Sea bass, black.....	.....	.....	.....	174	204	125	.....	503	965	209	140	.....	2,320
Sea bass, white.....	454	4,099	21,968	11,981	10,148	12,022	6,772	9,860	17,273	10,035	10,575	3,800	118,987
Shark.....	6,201	1,445	2,806	7,682	23,822	35,896	9,949	18,494	6,697	8,118	17,246	21,092	159,578
Sheepshead.....	992	690	272	.....	.....	.....	.....	11	118	4,078	11,012	.....	26,460
Skate.....	.....	33	.....	467	.....	.....	.....	.....	.....	.....	.....	.....	500
Smelt.....	2,300	2,490	2,112	703	.....	65	.....	1,165	107	10	.....	1,445	10,397
Sole.....	107	104	.....	.....	.....	.....	50	213	.....	37	.....	.....	511
Swordfish, broadbill.....	.....	.....	.....	.....	.....	.....	6,259	6,158	5,882	1,201	1,320	.....	20,820
Tuna, albacore.....	3,380	.....	.....	.....	.....	48,856	800,071	538,534	98,518	164,025	63,448	.....	1,716,832
Tuna, bluefin.....	.....	.....	.....	.....	.....	.....	22,739	.....	6,235	.....	82	12,805	41,861
Tuna, skipjack.....	.....	.....	.....	.....	.....	.....	.....	15	210	.....	.....	.....	225
Yellowtail.....	2,914	.....	.....	.....	162	1,733	4,492	.....	168	777	93	60	10,399
Miscellaneous fish.....	15	205	.....	.....	.....	129	17	.....	5	.....	20	.....	391

TABLE 23—Continued
Monthly Landings and Shipments of Commercial Fish Into the San Diego Region During 1951

Species	January	February	March	April	May	June	July	August	September	October	November	December	Total pounds
Crustacean:													
Crab, rock	193	254	116							2,595	1,974	534	5,666
Lobster, spiny	10,044	7,673	6,853							56,274	36,734	11,648	132,226
Mollusk:													
Abalone	27,727		19,523	49,624	20,551	44,338	15,965	21,153	13,482	12,300	27,175	54,797	306,635
Clam	1,487	1,440	2,464	3,135	4,555	5,979	6,502	5,122	3,445	1,987	1,404	633	38,153
Clam, jackknife	1,266	809	1,401	2,402	3,512	4,482	3,694	3,992	4,217	2,367	929	577	29,618
Total pounds	2,529,101	454,711	88,485	140,291	188,114	291,536	929,972	619,078	196,604	1,369,125	1,121,097	1,112,637	9,040,751
Fishing boat landings from waters south of the international boundary:													
Barracuda	37,957	73,910	92,726	12,169	1,729	61,460	19,382	5,710	8,573	12,737	6,929	15,739	349,021
Bonito	1,125	257	5,968			3,491		1,886	45,869	60,616	915	525	120,652
Cabrilla	1,660	5,214	3,738	2,618	4,041	20,543	1,176			4,350	4,606	5,117	53,063
Grouper		9,763	4,875	2,275	6,366	14,900	332			10,007	722	4,866	51,186
Halibut, California		8,169	2,211	17,474			72,503	50,430	30,010	8,145	605	134	189,950
Kingsfish	354	383		6		931	240						246
Rock bass	3,766	2,264	3,334	286	345		901	602	206	115		2,266	9,723
Rockfish					295				732		4,563	143	11,763
Sablefish												137	137
Sculpin								360					360
Sea bass, black	442	744	1,462	753	5,614	13,443	2,519	18,838	742	49,206	22,513	6,045	122,321
Sea bass, white		1,056	28,272		1,348	1,797	7,974	76,340	13,239	63,265	20,448	5,709	219,538
Shark		148		300	20	4,045	2,478	965	1,879	5,397	10,081	3,307	28,620
Sheepshead					38	300	335		92	321	293	817	2,196
Sierra	200						3,576	18,746	410				610
Swordfish, broadbill							4,645,992	8,310,015	598	910			23,830
Tuna, albacore	135					91,815	5,685	53,366	836,238	250,991	4,977		14,239,263
Tuna, bluefin									233,882	56,177			349,110
Tuna, skipjack	10,480,267	7,734,481	3,502,655	686,446	5,429,712	10,823,556	8,230,493	5,619,448	3,290,086	3,388,759	2,703,949	328,374	62,195,226
Tuna, yellowfin	8,883,170	6,116,358	4,463,200	273,144	6,457,581	13,739,920	10,070,842	9,218,465	11,260,886	8,546,608	7,142,444	161,054	86,333,672

[illegible]

¹ See Table 14 for origin of shipments.

TABLE 24
The Value, by Region, of the Annual Landings and Shipments of Commercial Fish Into California During 1951

Species	Eureka region		Sacramento region		San Francisco region		Monterey region	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Fishing boat landings:								
Anchovy.....					284,100	\$8,722	5,050,057	\$99,992
Barracuda.....								
Bonito.....					1,263	40	7,519	702
Cabezone.....							18,978	504
Cabrilla.....								
Carp.....	63,160	\$474	824,764	\$39,341	3,884	190		
Catfish.....			238,126	50,792				
Flounder.....	526,330	27,843	795	80	589,369	26,402	6,840	451
Flying fish.....								
Grouper.....					6,700	402		
Hake.....					24,972	312		
Halibut, California.....					6,515	1,314	64,416	14,120
Halibut, Pacific.....	28,119	6,332			58,630	14,546		
Herring, Pacific.....	52,990	1,336			3,672,383	29,195	1,192,270	22,773
Kingfish.....					7,893	476	222,441	16,661
Lingcod.....	937,583	83,303			583,612	46,398	127,106	11,783
Mackerel, jack.....	190	10			202	10	777,480	28,845
Mackerel, Pacific.....							357,918	16,858
Mullet.....								
Perch.....	45,944	5,987			78,833	10,624	37,864	3,017
Pike.....			156	13				
Pompano, California.....					1,376	770	31,447	14,774
Rock bass.....								
Rockfish.....	4,573,598	234,626			2,204,245	105,804	3,176,243	210,902
Sablefish.....	1,220,318	118,249			265,858	18,316	1,038,200	52,533
Salmon.....	2,002,365	520,130			3,165,400	925,562	679,128	224,383
Sand dab.....	122,072	7,886	1,343,171	301,677	279,651	15,996	121,041	9,345
Sardine.....					165,144	3,815	1,757,070	52,887
Soulin.....								
Sea bass, black.....								
Sea bass, white.....					2,407	498	38,668	8,078
Seatrout, greenling.....					324	16	259	9

	1,773	385	606,076	38,365	80,507	4,259	115	6
Shad.....	1,773						8,871	492
Shark.....								
Sheepshead.....								
Sierra.....	163	3			62,065	963	11,356	320
Skate.....	260,743	16,453			420,363	29,634	197,572	10,787
Smelt.....	12,247,638	808,344	1,850	277	4,684,163	341,285	797,907	60,959
Sole.....								
Spittail.....			660	172				
Swordfish, broadbill.....					530	239	541	216
Tomcod.....	600	30			1,418	78		
Tuna, albacore.....	2,051,494	259,001	28,027	6,124	2,652,354	421,643	2,966,742	390,127
Tuna, black skipjack.....								
Tuna, bluefin.....					4,832	695	67,095	10,061
Tuna, skipjack.....					201,998	29,906	89,358	12,884
Tuna, yellowfin.....					97,935	3,515	18,848	2,910
Turbot.....	9,416	491					350	14
Wahoo.....					38,134	3,497	12,613	1,462
Whitebait.....	111,307	10,624						
Whitefish, ocean.....								
Yellowtail.....								
Miscellaneous fish.....	39,582	1,952			56,691	2,342	8,705	613
Crustacean:								
Crab.....								
Crab, rock.....	7,790,805	1,040,072			3,551,917	546,285	14,898	2,863
Lobster, spiny.....					1,000	50		
Prawn.....							2,694	1,078
Shrimp.....					931,323	63,796		
Mollusk:								
Abalone.....					8,005	1,152		
Clam.....								
Clam, gaper.....							3,412	194
Clam, jackknife.....								
Clam, Washington.....	5,295	511						
Mussel.....								
Octopus.....	2,841	140					196	14
Oyster, eastern.....					12,662	586	12,710	1,274
Oyster, native.....					178,716	28,460		
Oyster, Pacific.....					17,603	2,804		
Squid.....					132,452	14,385		
							11,632,468	318,730
Total pounds and value.....	32,094,926	\$3,144,182	3,043,634	\$536,841	24,537,459	\$2,710,882	30,551,716	\$1,603,621

TABLE 24—Continued
The Value, by Region, of the Annual Landings and Shipments of Commercial Fish Into California During 1951

Species	Eureka region		Sacramento region		San Francisco region		Monterey region	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Shipments: ¹								
Barraкуда.....								
Bonito.....					2,194	\$214	4,664	\$436
Catfish.....			9,242	\$1,971	760	141		
Corbina, Mexican.....								
Halibut, California.....					35,388	4,243		
Halibut, Pacific.....					25,036	2,070		
Lingcod.....								
Rockfish.....					208,366	14,219		
Sablefish.....					22,904	6,697		
Salmon.....								
Sea bass, black.....								
Sea bass, white.....								
Shark.....								
Sole.....								
Tuna, albacore.....					5,522,576	884,164		
Tuna, bluefin.....								
Tuna, mebacki.....					30,000	5,697		
Tuna, skipjack.....					260,358	37,492	327,238	47,021
Tuna, yellowfin.....					929,311	137,584	1,203,184	185,940
Yellowtail.....								
Miscellaneous fish.....					19,760	814		
Mollusk:								
Clam.....								
Clam, Pismo.....					22,250	4,003		
Mussel.....								
Total pounds and value.....			9,242	\$1,971	7,077,903	\$1,097,338	1,540,086	\$237,400
Grand totals.....	32,091,326	\$3,144,182	3,052,876	\$438,812	31,615,362	\$3,808,220	32,091,802	\$1,837,021

¹ See Table 14 for origin of shipments.

TABLE 24—Continued
The Value, by Region, of the Annual Landings and Shipments of Commercial Fish Into California During 1951

Species	Santa Barbara region		Los Angeles region		San Diego region		Total	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Fishing boat landings:								
Anchovy	201,589	\$3,346	1,406,402	\$30,040	12,724	\$660	6,654,852	\$143,660
Barracuda	94,574	10,309	1,396,030	246,678	616,132	99,752	2,106,736	356,739
Bonito	6,354	564	659,435	61,897	123,495	11,102	776,803	71,265
Cabezone	3,616	173					23,857	717
Cabrilla			338,707	52,262	53,063	7,052	391,770	59,314
Carp			40,511	1,215			932,319	41,220
Catfish							238,126	50,792
Flounder	4,518	255	975	79			1,128,827	55,110
Flying fish			53,213	4,193	238	24	53,451	4,217
Grouper			522,854	106,820	54,186	10,127	583,710	117,349
Hake							24,972	312
Halibut, California	214,458	49,689	304,013	76,277	276,531	57,241	865,933	198,611
Halibut, Pacific							86,749	20,878
Herring, Pacific							4,917,643	53,304
Kingfish	4,094	189	412,426	23,636	35,342	3,287	682,196	44,249
Lingcod	21,124	2,217	2,190	340	499	56	1,672,114	144,037
Mackerel, jack	5,207,355	92,690	83,810,564	1,894,119	42,304	728	89,838,095	2,016,402
Mackerel, Pacific	776,677	19,028	32,000,049	881,601	383,791	14,661	33,518,435	932,148
Mullet			3,426	137	104,407	6,787	107,833	6,924
Perch	9,358	1,468	68,172	13,840			240,171	34,836
Pike			720	22			876	35
Pompano, California	6,656	1,530	23,712	5,017	1,033	207	64,224	22,238
Rock bass	33,769	3,353	236,968	40,213	17,835	2,001	288,572	45,567
Rockfish	268,146	23,597	725,987	73,760	43,833	5,957	10,992,052	654,646
Sablefish	1,141	57	59,419	10,191	137	14	2,585,073	193,360
Salmon	1,859	724	451	162	227	124	7,192,701	1,972,762
Sand dab	2,843	218	18,026	3,042	188	28	543,821	36,515
Sardine	74,972,583	1,560,934	246,572,620	5,547,883	5,425,044	75,951	338,892,731	7,247,470
Sculpin	637	83,676	15,949	2,409	17,124	2,409	101,437	18,412
Sea bass, black	1,191	163	151,652	25,099	124,641	20,242	277,454	45,504
Sea bass, white	311,737	72,977	841,672	211,976	338,325	71,091	1,533,029	364,620
Seatrout, greenling							583	25

Clam, jackknife.....					29,648	8,115	29,648	8,115
Clam, Washington.....					5,295	196	5,295	511
Mussel.....								14
Octopus.....	483			504			29,200	2,139
Oyster, eastern.....							178,716	28,460
Oyster, native.....							17,603	2,804
Oyster, Pacific.....	1,248						133,700	14,477
Squid.....	335			749,355		711	12,382,869	336,137
Total pounds and value	85,162,409	\$2,243,358	515,509,564		171,423,909	\$25,903,411	865,723,017	\$65,796,883
Shipments: ¹								
Barraкуда.....								
Bonito.....					28,207	\$4,567	28,207	\$4,567
Catfish.....							6,358	650
Corbina, Mexican.....					3,965	665	10,002	2,112
Halibut, California.....					1,017	211	3,965	665
Halibut, Pacific.....							1,017	211
Lingcod.....							598,892	128,869
Rockfish.....							75,229	9,685
Sablefish.....					1,505	205	1,505	205
Salmon.....							302,415	30,691
Sea bass, black.....							1,408,464	502,866
Sea bass, white.....					4,035	655	4,035	655
Shark.....					13,526	2,840	13,526	2,840
Sole.....					135	14	135	14
Tuna, albacore.....							1,627	276
Tuna, bluefin.....					61,445	10,108	17,520,891	2,812,527
Tuna, mebachi.....					2,112	325		
Tuna, skipjack.....							30,000	5,697
Tuna, yellowfin.....					95,628	13,809	2,750,824	389,857
Yellowtail.....					1,749,520	271,001	13,422,415	2,061,884
Miscellaneous fish.....					16,429	1,539	20,874	1,962
Mollusk:					204	15	162,627	32,586
Clam.....								
Clam, Pismo.....							22,450	4,075
Mussel.....					777,200	5,440	2,064,924	27,490
Total pounds and value					2,754,928	\$311,424	38,365,161	\$6,023,932
Grand totals.....	85,162,409	\$2,243,358	542,492,566		177,578,837	\$26,214,835	904,088,178	\$72,820,815

¹ See Table 14 for origin of shipments.

TABLE 25

Landings of the Commercial Fishing Boats in the Eureka Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Eureka region totals.....		\$3,144,182	32,094,326
Eureka.....	Sole.....	\$648,001	9,818,196
	Crab.....	370,437	2,774,807
	Salmon.....	182,752	703,705
	Rockfish.....	93,639	1,825,315
	Sablefish.....	69,117	713,283
	Albacore.....	46,056	364,797
	Lingcod.....	29,061	327,081
	Flounder.....	20,635	390,077
	Sand dab.....	6,567	101,659
	All other.....	19,663	223,138
	Totals.....	\$1,485,928	17,242,058
Fort Bragg.....	Albacore.....	\$211,129	1,672,311
	Salmon.....	183,654	707,179
	Rockfish.....	125,070	2,438,021
	Sole.....	88,462	1,340,328
	Sablefish.....	46,392	478,761
	Lingcod.....	37,014	416,590
	Smelt.....	10,363	164,227
	Crab.....	4,028	30,174
	All other.....	4,387	60,718
	Totals.....	\$710,499	7,308,309
Crescent City.....	Crab.....	\$384,850	2,882,773
	Salmon.....	107,125	412,494
	Sole.....	23,825	360,986
	Lingcod.....	12,804	144,106
	Rockfish.....	8,403	163,799
	All other.....	15,142	216,184
	Totals.....	\$552,149	4,180,342
Fields Landing.....	Crab.....	\$162,489	1,217,144
	Sole.....	48,053	728,082
	Salmon.....	7,579	29,184
	Rockfish.....	7,490	146,011
	All other.....	10,829	127,775
	Totals.....	\$236,440	2,248,196
Trinidad.....	Crab.....	\$117,935	883,412
	Salmon.....	5,918	22,340
	All other.....	180	1,710
	Totals.....	\$124,033	907,462
Shelter Cove.....	Salmon.....	\$26,813	103,247
	All other.....	600	7,668
	Totals.....	\$27,413	110,915
All other ports.....	All other.....	\$7,720	97,044
	Totals.....	\$7,720	97,044

TABLE 26

Landings of the Commercial Fishing Boats and Shipments Into the Sacramento Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Sacramento region totals-----		\$438,812	3,052,876
Pittsburg-----	Salmon-----	\$155,056	690,364
	Catfish-----	24,926	116,858
	Shad-----	15,250	240,918
	Carp-----	9,635	201,994
	All other-----	1,750	8,021
	Totals-----	\$206,617	1,258,155
Benicia-----	Salmon-----	\$50,674	225,619
	Shad-----	19,615	309,868
	All other-----	1,223	8,478
	Totals-----	\$71,512	543,965
Rio Vista-----	Salmon-----	\$45,559	202,843
	All other-----	1,829	8,644
	Totals-----	\$47,388	211,487
Martinez-----	Salmon-----	\$41,413	184,386
	All other-----	306	4,369
	Totals-----	\$41,719	188,755
Clear Lake-----	Carp-----	\$28,934	606,578
	Totals-----	\$28,934	606,578
Sacramento-----	Catfish-----	\$7,311	34,276
	Salmon-----	6,367	28,347
	All other-----	200	1,259
	Totals-----	\$13,878	63,882
Bethel Island-----	Catfish-----	\$11,176	52,396
	Carp-----	42	885
	Totals-----	\$11,218	53,281
All other ports-----	Catfish-----	\$7,525	35,280
	All other-----	10,021	91,493
	Totals-----	\$17,546	126,773

TABLE 27

Landings of the Commercial Fishing Boats and Shipments Into the San Francisco Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
San Francisco region totals-----		\$3,808,220	31,615,362
San Francisco-----	Albacore-----	\$1,127,806	7,044,383
	Crab-----	372,098	2,419,364
	Salmon-----	253,180	865,869
	Sole-----	179,241	2,438,662
	Yellowfin tuna-----	167,490	1,131,309
	Skipjack-----	38,187	265,190
	Shrimp-----	38,064	555,678
	Rockfish-----	26,625	554,687
	Sablefish-----	22,015	319,526
	Lingcod-----	21,832	274,614
	Flounder-----	18,262	407,637
	Pacific halibut-----	16,012	80,082
	Smelt-----	11,228	159,262
	Sand dab-----	10,117	176,864
	All other-----	40,319	991,011
	Totals-----	\$2,342,476	17,684,138
Point Reyes-----	Salmon-----	\$433,960	1,484,131
	Sole-----	77,952	1,060,574
	Rockfish-----	49,805	1,037,601
	Crab-----	49,035	318,825
	Lingcod-----	12,128	152,555
	All other-----	25,171	418,346
	Totals-----	\$648,051	4,472,032
Bodega Bay-----	Salmon-----	\$92,536	316,589
	Crab-----	87,531	569,124
	Sole-----	87,047	1,184,314
	Rockfish-----	29,257	609,523
	Albacore-----	17,179	107,302
	Smelt-----	16,651	236,189
	Lingcod-----	12,706	159,823
	All other-----	12,608	197,649
	Totals-----	\$355,535	3,380,463
Sausalito-----	Albacore-----	\$160,625	1,003,280
	Salmon-----	54,279	185,634
	Crab-----	13,829	89,915
	Totals-----	\$228,733	1,278,829
Princeton (Halfmoon Bay)-----	Salmon-----	\$92,388	315,966
	Crab-----	8,302	53,973
	All other-----	4,416	52,036
	Totals-----	\$105,106	421,975
Tomales Bay (Marshall)-----	Pacific herring-----	\$27,737	3,488,933
	Eastern oyster-----	15,569	97,766
	Pacific oyster-----	8,865	81,627
	All other-----	8,184	57,438
	Totals-----	\$60,355	3,725,764
Oakland-----	Crab-----	\$14,164	92,095
	Salmon-----	3,827	13,088
	All other-----	3,744	32,196
	Totals-----	\$21,735	137,379

TABLE 27—Continued

Landings of the Commercial Fishing Boats and Shipments Into the San Francisco Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Richmond-----	Shrimp-----	\$19,083	278,580
	All other-----	86	387
	Totals-----	\$19,169	278,967
Drakes Bay-----	Eastern oyster-----	\$12,891	80,950
	Pacific oyster-----	5,520	50,825
	Totals-----	\$18,411	131,775
All other ports-----	All other-----	\$8,649	104,040
	Totals-----	\$8,649	104,040

TABLE 28

Landings of the Commercial Fishing Boats and Shipments Into the Monterey Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Monterey region totals-----		\$1,837,021	32,091,802
Monterey-----	Squid-----	\$313,626	11,446,190
	Yellowfin tuna-----	188,850	1,227,032
	Rockfish-----	184,683	2,781,373
	Albacore-----	112,919	858,697
	Anchovy-----	98,885	4,994,188
	Salmon-----	89,792	271,768
	Skipjack-----	59,908	416,896
	Sardine-----	39,983	1,328,341
	Jack mackerel-----	23,175	624,667
	Sablefish-----	14,801	292,513
	Sole-----	13,227	173,131
	Bluefin tuna-----	10,061	67,095
	Lingcod-----	8,376	90,358
	Kingfish-----	8,126	108,489
	Pacific mackerel-----	5,269	111,872
	All other-----	22,446	287,932
	Totals-----	\$1,194,127	25,080,542
Moss Landing-----	Albacore-----	\$266,021	2,022,972
	Salmon-----	71,035	214,998
	Pacific herring-----	18,429	964,865
	Sole-----	8,642	113,121
	White sea bass-----	7,900	37,837
	Pacific mackerel-----	4,837	102,693
	Jack mackerel-----	4,777	128,749
	California halibut-----	4,236	19,323
	Squid-----	4,172	152,260
	Sardine-----	3,477	115,525
	All other-----	6,600	75,484
	Totals-----	\$400,126	3,947,827
Santa Cruz-----	Salmon-----	\$63,556	192,362
	Sole-----	39,090	511,655
	Sablefish-----	37,694	744,945
	Rockfish-----	25,542	384,672
	California pompano-----	12,926	27,513
	Albacore-----	11,187	85,073
	Sardine-----	9,427	313,204
	Kingfish-----	6,995	93,395
	Pacific mackerel-----	6,752	143,353
	Smelt-----	6,448	118,098
	California halibut-----	5,910	26,962
	All other-----	16,501	408,836
	Totals-----	\$242,028	3,050,068
All other ports-----	All other-----	\$740	13,365
	Totals-----	\$740	13,365

TABLE 29

Landings of the Commercial Fishing Boats in the Santa Barbara Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Santa Barbara region totals		\$2,243,358	85,162,409
Port Hueneme	Sardine	\$575,871	27,553,623
	Jack mackerel	69,933	3,928,846
	White sea bass	16,685	71,272
	Pacific mackerel	12,010	490,213
	Barracuda	5,781	53,035
	Rockfish	5,099	57,943
	All other	18,461	300,569
	Totals	\$703,840	32,455,501
Avila	Sardine	\$571,080	27,324,365
	Abalone	10,881	92,093
	Jack mackerel	5,767	324,000
	Rockfish	5,555	63,130
	Crab	5,341	34,818
	All other	17,898	149,049
	Totals	\$616,522	27,987,455
Santa Barbara	Sardine	\$289,939	13,872,665
	Spiny lobster	94,295	315,369
	White sea bass	51,226	218,823
	California halibut	40,959	176,777
	Sole	34,812	431,376
	Shark	24,231	364,381
	Abalone	17,107	144,794
	Jack mackerel	16,989	954,436
	Broadbill swordfish	10,721	26,710
	Crab	10,169	66,290
	Pacific mackerel	6,649	271,389
	All other	16,273	158,818
	Totals	\$613,370	17,001,828
Morro Bay	Sardine	\$130,044	6,222,200
	Abalone	32,357	273,864
	Albacore	17,035	126,657
	Crab	16,752	109,205
	Rockfish	7,551	85,807
	All other	5,570	52,420
	Totals	\$209,309	6,870,153
San Simeon	Abalone	\$48,495	410,450
	Lingcod	15	147
	Totals	\$48,510	410,597
Channel Islands ¹	Abalone	\$43,840	371,048
	Totals	\$43,840	371,048
All other ports	Abalone	\$5,892	49,865
	All other	2,075	15,962
	Totals	\$7,967	65,827

¹ San Miguel, Santa Rosa and Santa Cruz Islands.

TABLE 30

Landings of the Commercial Fishing Boats and Shipments Into the Los Angeles Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
Los Angeles region totals.....		\$35,134,387	542,492,566
Terminal Island.....	Yellowfin tuna.....	\$11,478,630	74,439,881
	Skipjack.....	6,704,188	47,547,431
	Sardine.....	4,074,823	181,103,255
	Albacore.....	2,824,456	17,575,957
	Jack mackerel.....	1,220,535	54,005,958
	Pacific mackerel.....	547,820	19,884,585
	Bluefin tuna.....	404,492	2,579,666
	Yellowtail.....	205,947	2,163,310
	Bonito.....	57,386	592,834
	Squid.....	14,518	628,500
	All other.....	1,570	24,741
	Totals.....	\$27,534,365	400,546,118
Long Beach.....	Sardine.....	\$788,153	35,029,026
	Yellowfin tuna.....	772,627	5,010,548
	Skipjack.....	638,951	4,531,570
	Jack mackerel.....	211,674	9,366,124
	Pacific mackerel.....	137,061	4,974,999
	Yellowtail.....	117,175	1,230,828
	Albacore.....	78,752	490,053
	Pismo clam.....	22,020	1,287,724
	Bluefin tuna.....	17,699	112,876
	Spiny lobster.....	16,552	39,952
	Rock bass.....	9,471	55,813
	Abalone.....	6,451	85,000
	Rockfish.....	9,083	59,872
	Grouper.....	5,876	28,761
	Barracuda.....	5,617	31,791
	All other.....	18,619	261,544
	Totals.....	\$2,852,781	62,596,481
Wilmington.....	Yellowfin tuna.....	\$568,378	3,685,982
	Skipjack.....	504,841	3,580,436
	Jack mackerel.....	408,736	18,085,666
	Sardine.....	373,721	16,609,814
	Pacific mackerel.....	82,913	3,009,540
	Bluefin tuna.....	45,715	291,551
	Albacore.....	40,710	253,330
	Yellowtail.....	12,679	133,185
	All other.....	745	8,765
	Totals.....	\$2,038,438	45,658,269
San Pedro.....	Barracuda.....	\$226,749	1,283,241
	White sea bass.....	200,024	794,220
	Grouper.....	99,235	485,730
	Bluefin tuna.....	65,737	419,239
	California halibut.....	61,975	247,011
	Spiny lobster.....	61,371	148,132
	Abalone.....	53,908	710,251
	Cabrilla.....	48,240	312,640
	Rockfish.....	38,833	382,214
	Sardine.....	33,007	1,466,970
	Albacore.....	31,744	197,538
	Rock bass.....	28,608	168,582
	Yellowtail.....	28,500	299,370
	Black sea bass.....	24,320	146,950
	Jack mackerel.....	20,388	902,123
	Pacific mackerel.....	19,456	706,214
	Kingfish.....	19,350	337,617
	Sculpin.....	14,013	73,519
	Yellowfin tuna.....	13,667	88,630
	Perch.....	10,865	53,520

TABLE 30—Continued

Landings of the Commercial Fishing Boats and Shipments Into the Los Angeles Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
San Pedro—Continued	Shark	\$10,151	84,035
	Smelt	10,125	197,298
	Broadbill swordfish	9,908	22,166
	Sablefish	9,311	54,289
	All other	29,952	520,941
	Totals	\$1,169,437	10,102,440
Los Angeles	Salmon	\$496,169	1,385,560
	Pacific halibut	124,626	473,504
	Sablefish	16,472	96,049
	Lingcod	7,810	50,449
	All other	33,748	190,688
	Totals	\$678,825	2,196,250
Newport Beach	Sardine	\$139,195	6,186,466
	Pacific mackerel	94,181	3,418,547
	Abalone	93,841	1,236,373
	Albacore	81,542	507,420
	Broadbill swordfish	49,826	111,467
	Jack mackerel	32,780	1,450,426
	Spiny lobster	18,017	43,488
	White sea bass	8,307	32,983
	California halibut	7,430	29,612
	All other	25,580	245,387
	Totals	\$550,699	13,262,169
Santa Monica	Sardine	\$138,984	6,177,089
	Spiny lobster	30,213	72,926
	Anchovy	20,037	910,790
	Rockfish	17,594	173,174
	Barracuda	8,022	45,401
	California halibut	6,098	24,303
	All other	15,793	123,200
	Totals	\$236,741	7,526,883
San Clemente Island	Abalone	\$19,116	251,858
	Spiny lobster	96	232
	Totals	\$19,212	252,090
Dana Point	Spiny lobster	\$16,189	39,075
	All other	1,674	17,624
	Totals	\$17,863	56,699
Redondo Beach	Rockfish	\$6,007	59,128
	Spiny lobster	3,867	9,335
	All other	6,586	59,216
	Totals	\$16,460	127,679
Santa Catalina Island	Abalone	\$3,069	40,440
	Broadbill swordfish	2,825	6,321
	All other	5,548	36,514
	Totals	\$11,442	83,275
All other ports	Abalone	\$5,670	74,703
	All other	2,454	9,510
	Totals	\$8,124	84,213

TABLE 31

Landings of the Commercial Fishing Boats and Shipments Into the San Diego Region During 1951, Shown by Port of Landing With the Corresponding Values

		Value	Pounds
San Diego region totals-----		\$26,214,835	177,578,837
San Diego-----	Yellowfin tuna-----	\$12,273,456	79,234,708
	Skipjack-----	7,758,307	53,727,886
	Albacore-----	1,751,249	10,645,891
	Spiny lobster-----	304,704	757,029
	Barracuda-----	103,681	640,402
	Sardine-----	75,951	5,425,044
	Yellowtail-----	68,857	734,867
	White sea bass-----	67,937	323,509
	California halibut-----	53,612	258,997
	Bluefin tuna-----	51,064	331,800
	Black sea bass-----	20,869	128,505
	Abalone-----	20,439	303,705
	Broadbill swordfish-----	19,896	44,650
	Shark-----	18,349	176,094
	Pacific mackerel-----	14,649	383,484
	Grouper-----	10,127	54,186
	Bonito-----	9,764	108,615
	Cabrilla-----	7,052	53,063
	Rockfish-----	5,738	42,219
	Pismo clam-----	5,440	777,200
	All other-----	22,235	205,048
	Totals-----	\$22,663,376	154,356,902
Point Loma-----	Yellowfin tuna-----	\$1,370,630	8,848,484
	Skipjack-----	1,236,958	8,566,193
	Albacore-----	883,045	5,368,055
	Yellowtail-----	10,743	114,657
	Bluefin tuna-----	9,431	61,283
	Bonito-----	1,324	14,730
	Totals-----	\$3,512,131	22,973,402
Oceanside-----	White sea bass-----	\$4,792	22,818
	California halibut-----	3,160	15,266
	All other-----	3,462	18,987
	Totals-----	\$11,414	57,071
Mission Beach-----	Clam-----	\$5,289	19,497
	Jackknife clam-----	2,862	10,455
	Totals-----	\$8,151	29,952
Salton Sea-----	Mullet-----	\$6,787	104,407
	Totals-----	\$6,787	104,407
All other ports-----	Lobster-----	\$7,699	19,128
	All other-----	5,277	37,975
	Totals-----	\$12,976	57,103

TABLE 32
The Recorded State-wide Catch, in Numbers of Fish, Made by Anglers Fishing From
Licensed Party Boats and the Number of Angler Days

Species	1936	1937	1938	1939	1940	1946	1947	1948	1949	1950	1951
Albacore.....	410	1,368	3,880	8,730	159	11,061	8,044	15,313	23,461	114,502	75,924
Barracuda.....	595,062	742,849	374,109	732,878	761,609	388,533	689,640	413,036	363,990	251,040	269,545
Halibut, California.....	71,366	49,904	35,587	85,708	94,945	134,423	133,187	178,639	106,516	86,998	59,295
Rock bass ¹	353,278	253,423	464,642	458,778	451,679	390,761	693,035	661,085	797,328	616,898	781,609
Salmon.....	238	1,370	2,610	4,038	7,075	2,950	5,063	11,188	20,404	52,995	71,970
Sea bass, white.....	12,815	12,756	16,406	32,241	17,591	12,935	21,632	25,051	62,570	58,586	44,367
Yellowtail.....	97,453	62,847	44,974	26,730	96,756	3,051	7,082	12,787	18,023	7,673	23,721
All other.....	826,857	1,009,665	1,011,396	1,271,220	1,061,169	299,944	861,746	1,279,394	959,101	1,046,901	1,024,213
Total number of fish.....	1,957,479	2,134,182	1,953,604	2,620,323	2,490,983	1,243,358	2,419,429	2,596,493	2,351,393	2,235,593	2,350,644
Number of angler days.....	204,189	328,216	217,211	241,386	273,861	209,043	447,816	533,309	490,943	602,431	556,949

¹ Rock bass includes two species, kelp bass (*Paralabrax clathratus*) and sand bass (*P. nebulifer*).

TABLE 33

The Recorded Catch of Live Bait in Southern California Made by the Vessels Supplying the Party Boat Fleet

Species	Pounds			
	1948	1949	1950	1951
Anchovy-----	7,172,581	5,554,194	7,647,640	10,283,730
Kingfish-----	51,953	101,934	48,545	79,458
Queenfish-----	493,859	395,769	232,618	204,097
Sardine-----	1,027,643	2,908,253	3,093,587	2,607,234
Sardine, firecrackers-----		1,070	4,251	3,797
Smelt-----	54,503	108,697	30,824	50,181
Total pounds-----	8,800,539	9,069,917	11,057,465	13,228,497
Number of boats reporting-----	25	23	25	22

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- * No. 1. Report on Fish Conditions. 1913; 48 pp., 3 figs.
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- * No. 3. The Spawning of the Grunion (*Leuresthes tenuis*). By Will F. Thompson, assisted by Julia Bell Thompson. 1919; 29 pp., 9 figs.
- * No. 4. The Edible Clams, Mussels and Scallops of California. By Frank W. Weymouth. 1920; 72 pp., 19 pls., 26 figs.
- * No. 5. A Key to the Families of Marine Fishes of the West Coast. By Edwin C. Starks. 1921; 16 pp., 4 figs.
- * No. 6. A History of California Shore Whaling. By Edwin C. Starks. 1923; 38 pp., 22 figs.
- * No. 7. The Life-History and Growth of the Pismo Clam. By Frank W. Weymouth. 1923; 120 pp., 15 figs., 18 graphs.
- * No. 8. Racial and Seasonal Variation in the Pacific Herring, California Sardine and California Anchovy. By Carl L. Hubbs. 1925; 23 pp., 4 pls.
- * No. 9. Preliminary Investigation of the Purse Seine Industry of Southern California. By Tage Skogsberg. 1925; 95 pp., 23 figs.
- * No. 10. The Life History of *Leuresthes tenuis*, an Atherine Fish with Tide Controlled Spawning Habits. By Frances N. Clark. 1925; 51 pp., 6 graphs, 7 pls.
- * No. 11. The California Sardine. By the Staff of the California State Fisheries Laboratory. 1926; 221 pp., 74 figs.
- * No. 12. The Weight-Length Relationship of the California Sardine (*Sardina caerulea*) at San Pedro. By Frances N. Clark. 1928; 58 pp., 11 figs.
- * No. 13. The Seasonal Average Length Trends at Monterey of the California Sardine (*Sardina caerulea*). By Carroll B. Andrews. 1928; 12 pp., 6 figs.
- * No. 14. Report on the Seals and Sea Lions of California. By Paul Bonnot. 1928; 61 pp., 38 figs.
- * No. 15. The Commercial Fish Catch of California for the Years 1926 and 1927. By the Bureau of Commercial Fisheries. 1929; 93 pp., 52 figs.
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- * No. 17. Sacramento-San Joaquin Salmon (*Oncorhynchus tshawytscha*) Fishery of California. By G. H. Clark. 1929; 73 pp., 32 figs.
- * No. 18. The Pismo Clam: Further Studies of Its Life History and Depletion. By William C. Herrington. 1930; 67 pp., 16 figs.
- * No. 19. Sardine Fishing Methods at Monterey, California. By W. L. Scofield. 1929; 61 pp., 27 figs.
- * No. 20. The Commercial Fish Catch of California for the Year 1928. By the Staff of the Bureau of Commercial Fisheries. 1930; 109 pp., 62 figs.
- * No. 21. Analysis of Boat Catches of White Sea Bass (*Cynoscion nobilis*) at San Pedro, California. By S. S. Whitehead. 1930; 26 pp., 20 figs.
- * No. 22. A Bibliography of the Tunas. By Genevieve Corwin. 1930; 103 pp.
- * No. 23. Success of the Purse Seine Boat in the Sardine Fishery at Monte California (1929-1930 Fishing Season). By J. B. Phillips. 1930, pp., 19 figs.
- * No. 24. An Analysis of the Catch Statistics of the Striped Bass (*Morone saxatilis*, Fishery of California. By J. A. Craig. 1930; 41 pp., 22 figs.

- * No. 25. Fishing Areas Along the California Coast for the Sardine (*Sardina caerulea*). By the California State Fisheries Laboratory. 1930; 44 pp., 25 figs.
- * No. 26. Seasonal Changes in the Daily Average Length of the California Sardine, *Sardina caerulea*. By Frances N. Clark. 1930; 20 pp., 11 figs.
- * No. 27. The Ring Net, Half Ring Net, or Purse Lampara in the Fisheries of California. By Donald H. Fry, Jr. 1931; 65 pp., 28 figs.
- * No. 28. Handbook of Common Commercial and Game Fishes of California. By Lionel A. Walford. 1931; 181 pp., 137 figs.
- * No. 29. The Striped Bass of California (*Roccus lineatus*). By Eugene C. Scofield. 1931; 82 pp., 47 figs.
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- * No. 35. A Distributional List of the Species of Freshwater Fishes Known to Occur in California. By Barton W. Evermann and Howard Walton Clark. 1931; 67 pp.
- * No. 36. A Bibliography of the Sardines. By Genevieve C. Wheeler. 1931; 133 pp.
- * No. 37. The California Barracuda (*Sphyaena argentea*). By Lionel A. Walford. 1932; 120 pp., 32 figs., 6 pls.
- * No. 38. The California Shrimp Industry. By Paul Bonnot. 1932; 20 pp., 11 figs.
- * No. 39. Fluctuations in the Abundance of Striped Bass (*Roccus lineatus*) in California. By G. H. Clark. 1933; 18 pp., 7 figs.
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- * No. 41. Early Life History of the California Sardine (*Sardina caerulea*), with Special Reference to Distribution of Eggs and Larvae. By Eugene C. Scofield. 1934; 48 pp., 24 figs.
- No. 42. Maturity of the California Sardine (*Sardina caerulea*), determined by Ova Diameter Measurements. By Frances N. Clark. 1934; 49 pp., 19 figs.
- No. 43. The Sizes of California Sardines Caught by the Different Fishing Gear and in the Different Localities of the Monterey and San Pedro Regions. By the California State Fisheries Laboratory. 1935; 59 pp., 27 figs.
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